NAVFAC

Final

Explanation of Significant Differences
Landfill Cap Redesign
IR Site 1, Tidal Area Landfill

Naval Weapons Station Seal Beach
Detachment Concord
Concord, California

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ABBREVIATIONS AND ACRONYMS

§	Section
ARAR	Applicable or relevant and appropriate requirement
BCDC	Bay Conservation and Development Commission
Cal/EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Det	Detachment
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
IR	Installation Restoration
MEC	Munitions and explosives of concern
MMRP	Military Munitions Response Program
msl	Mean sea level
NAVWPNSTA	Naval Weapons Station
NOSSA	Naval Ordnance Safety and Security Activity
RD	Remedial design
ROD	Record of Decision
Tetra Tech	Tetra Tech EM Inc.
USACE	U.S. Army Corps of Engineers
Water Board	San Francisco Bay Regional Water Quality Control Board

1.0 INTRODUCTION

This document presents the Explanation of Significant Differences (ESD) for the Record of Decision (ROD) issued in July 2004, which selected a landfill cap for the Tidal Area Landfill, Installation Restoration (IR) Site 1, at Naval Weapons Station (NAVWPNSTA) Seal Beach Detachment (Det) Concord, California. IR Site 1, Tidal Area Landfill, is being closed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. The Tidal Area Landfill is a former military municipal landfill that was operated from 1944 to 1979. The lead agency for investigation and cleanup of the site is the U.S. Department of the Navy (Navy). The lead federal support agency is the U.S. Environmental Protection Agency, Region 9 (EPA). State support agencies include the California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board (Water Board), as well as the California Department of Fish and Game.

This ESD has been prepared pursuant to Section (§) 117 (c) of CERCLA [Title 42 United States Code § 9617(c)] and Title 40 Code of Federal Regulations (CFR) § 300.435(c)(2)(i). This ESD describes changes to the landfill cap and the site setting, and demonstrates that the cap meets the ROD requirements and complies with the solid waste regulations contained in California Code of Regulations Title 27, Division 1. This ESD addresses only the landfill cap at IR Site 1. Groundwater conditions at the landfill and surrounding areas are the subject of a separate CERCLA remedial investigation for groundwater. This document will become part of the Administrative Record in accordance with 40 CFR § 300.825(a)(2). The Administrative Record is available for review at the Naval Facilities Engineering Command Southwest, 1220 Pacific Highway, San Diego, California 92132, from 8:00 a.m. to 4:00 p.m., and in the NAVWPNSTA Seal Beach Detachment Concord Information Repository at the City of Concord Public Library, 2900 Salvio Street Concord, California 94519, during normal library hours.

The Final ROD was signed in July 2004 under CERCLA for a presumptive remedy landfill cap at the IR Site 1 landfill (Navy 2004). The ROD identifies the substantive closure standards for the remedial design (RD), which was completed on June 16, 2005, and was revised on April 28, 2006. Site work at the IR Site 1 landfill began in May 2006.

This ESD was originally issued as a draft technical memorandum on March 5, 2007 (Tetra Tech EM Inc. [Tetra Tech] 2007a). The Navy received comments from the (1) EPA; (2) Cal/EPA's DTSC and Water Board; and (3) the California Department of Fish and Game, Office of Spill Prevention and Response. The Navy's responses to comments received from the regulatory agencies are presented as Appendix A in this document.

In addition to Section 1.0, Introduction, this document contains the following sections: Section 2.0, Site Conditions and Background; Section 3.0, Original Landfill Cap Design and Modification; and Section 4.0, Design Changes; Section 5.0, Affirmation of the Statutory Determinations; and Section 6.0, Declaration. Documents and other supporting information used to prepare this ESD are listed in Section 7.0. Figures are presented after their first mention in the text, and appendices follow Section 7.0. Appendix A presents the Navy's responses to regulatory agency comments on the draft technical memorandum; Appendix B contains the

revised plans; Appendix C provides the revised specifications; Appendix D presents the results of settlement calculations; Appendix E describes the stability evaluation; and Appendix F provides a supplemental ARARs evaluation.

2.0 SITE CONDITIONS AND BACKGROUND

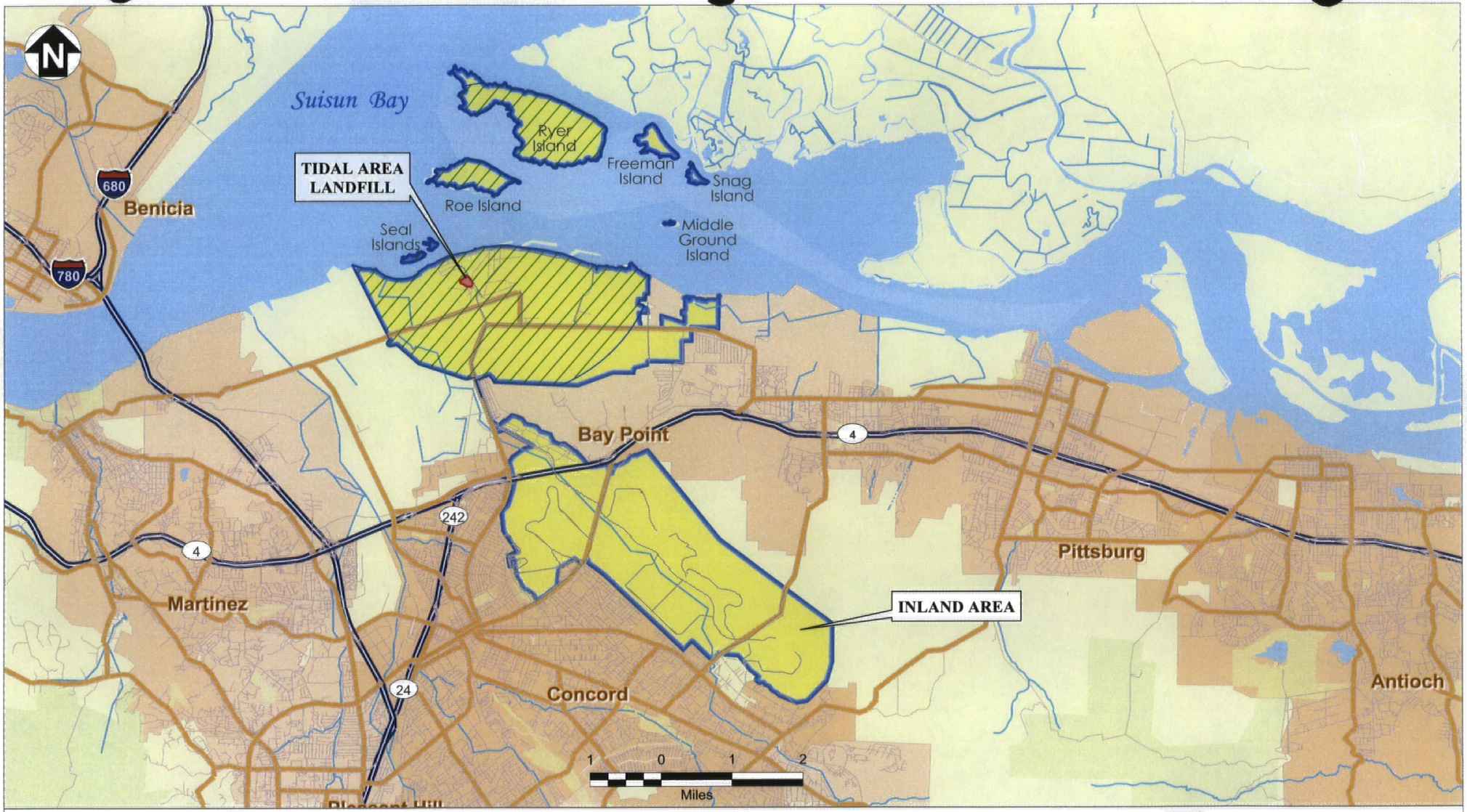
NAVWPNSTA Seal Beach Det Concord is the major naval munitions transshipment facility on the West Coast and is located in the north-central portion of Contra Costa County, California, about 30 miles northeast of San Francisco (Figure 1). NAVWPNSTA Seal Beach Det Concord, which encompasses 12,748 acres, is bounded by Suisun Bay to the north, by Los Medanos Hills and the City of Pittsburg to the east, and by the City of Concord to the south and west.

Currently, NAVWPNSTA Seal Beach Det Concord contains two main, separate land holdings: the Tidal Area, which includes islands in Suisun Bay, and the Inland Area (Figure 1). The Tidal Area and all responsibility for environmental restoration of that area will be transferred from the Navy to the U.S. Army as a federal-to-federal transfer within the Base Realignment and Closure process.

The 7,648-acre Tidal Area is located in a low marsh adjacent to Suisun Bay. IR Site 1, the Tidal Area Landfill, is one of four adjacent sites (IR Sites 1, 2, 9, and 11) in the Tidal Area currently being investigated by the Navy under the IR Program (Figure 2). Each of the four sites is within the boundary of Military Munitions Response Program (MMRP) Site 8, which is currently undergoing a site inspection as part of the MMRP process (Tetra Tech 2007b). The Tidal Area is of concern because it was the location of a 1944 shipboard explosion at the former Pier 1, involving more than 1,750 tons of ammunition. Objects up to 1,000 pounds were thrown distances up to 1.5 miles and to a height of over 12,000 feet. Most of these objects fell within 2,000 feet of the explosion site (Navy 1944a, 1944b).

IR Site 1 is located along the western side of Johnson Road, just north of Froid Road (Figure 2). The IR Site 1 landfill covers 12.5 acres and forms an asymmetric mound that reaches a maximum elevation of more than 10 feet above mean sea level (msl) near its eastern edge along Johnson Road. The western half of the landfill is at an elevation of 3 to 5 feet above msl. The area adjacent to the IR Site 1 landfill consists of a wetland that surrounds the landfill to the north, west, and south. The landfill served as the primary disposal area for NAVWPNSTA Seal Beach Det Concord from 1944 to 1979 and currently contains an estimated 125,000 to 135,000 cubic yards of municipal waste and cover soil.

Historical aerial photographs indicate, based on the expansion of the landfill perimeter, that most of the waste was deposited in the landfill between 1959 and 1974. Household garbage from NAVWPNSTA Seal Beach Det Concord and surrounding civilian communities, as well as shipboard waste from Navy vessels, was disposed of at the landfill. The landfill reportedly received solvents, acids, paint cans, creosote-treated timbers, asphalt, concrete, asbestos, and ordnance materials, including inert munitions.



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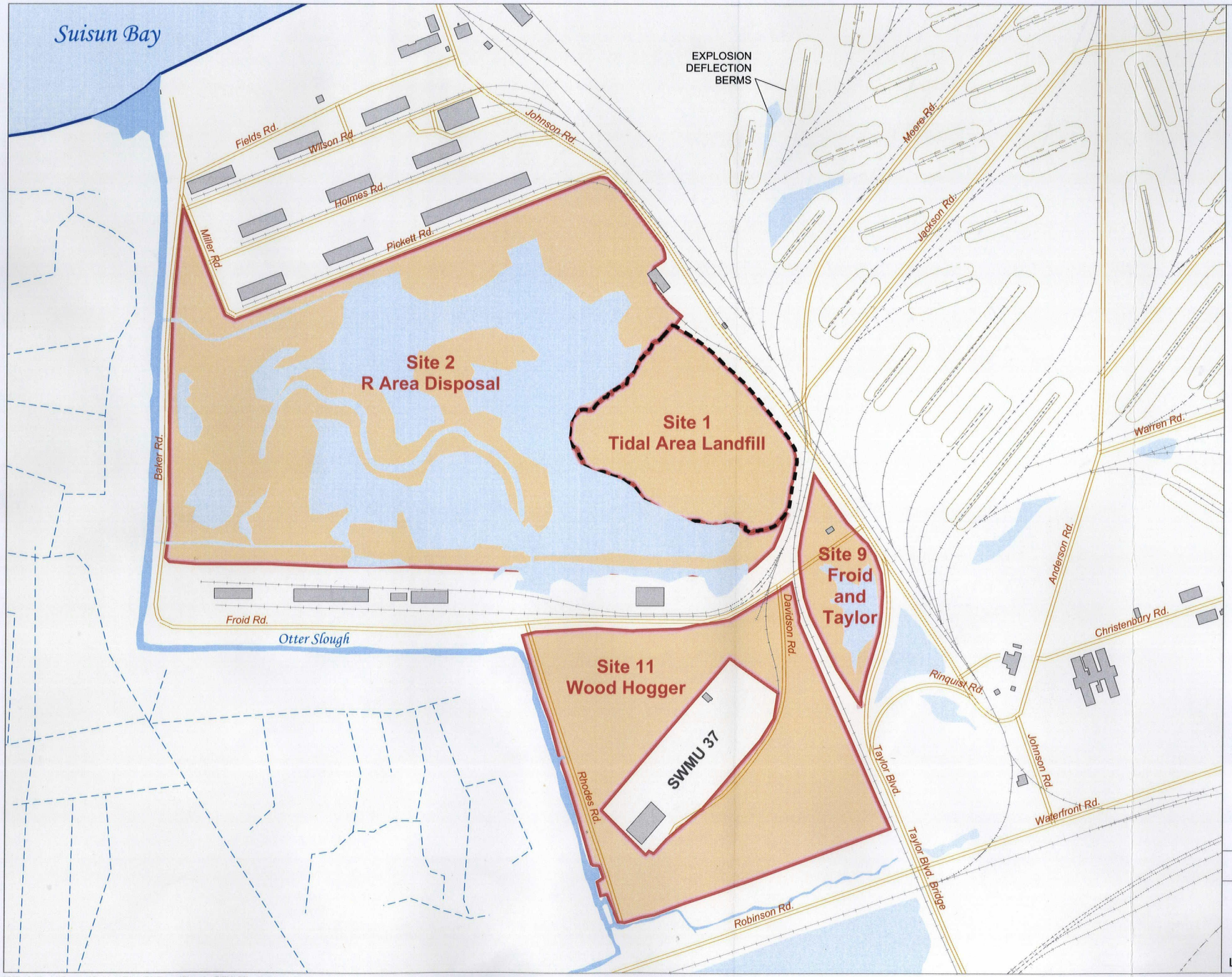
NAVWPNSTA SEAL BEACH DET CONCORD BOUNDARY

MILITARY MUNITION RESPONSE PROGRAM
SITE 8 INVESTIGATION AREA

NAVWPNSTA SEAL BEACH DET CONCORD

FIGURE 1
SITE VICINITY MAP

Explanation of Significant Differences,
Landfill Cap Redesign, IR Site 1, Tidal Area Landfill



NAVWPNSTA SEAL BEACH DET CONCORD

FIGURE 2
SITE LOCATION MAP

Explanation of Significant Differences,
Landfill Cap Redesign, IR Site 1, Tidal Area Landfill

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Historical aerial photographs further indicate the IR Site 1 landfill was created by the progressive disposal of debris placed directly on native soil outward from Johnson Road. Apparently, the area was not excavated before waste was discarded there. Based on the topographic evaluation, the waste was estimated to be up to 10 feet thick; however, the waste may be unevenly distributed, and the ratio of waste-to-soil in the fill may vary. The degree of landfill subsidence resulting from consolidation of the underlying Bay Mud is unknown. The area is currently covered by soil and soil mixed with waste; however, the origin of the soil is unknown.

Surface water at IR Site 2 to the west of the landfill is influenced by the ebb and flooding of tidal water in Suisun Bay. Water elevations change daily because of tidal fluctuation and are typically on the order of 1 foot (SulTech 2006). Surface water elevations were measured between the approximate extremes of 1.6 and 2.9 feet (1929 National Geodetic Vertical Datum) during the wet and dry season tidal influence surveys in 2005 and 2006 (SulTech 2006). Although lower water levels may not readily occur at the site because the area does not drain well, higher water levels are likely during extreme tides and storm events.

The landfill boundary is distinct relative to the relatively flat surrounding wetland habitat to the north, west, and south. In addition to a sharp break in slope, the landfill boundary is also sharply defined by the water's edge near the toe of the landfill slope. Terrestrial plant life extends only to the water's edge.

Bay Mud at the site consists chiefly of silty clay with local horizons of peat. Because the Bay Mud is not consolidated, the weight of the refuse in the landfill has likely compressed the underlying Bay Mud to some extent. Silty clay is the predominant lithology of the Bay Mud, although peat lenses are present beneath the landfill, and a sand body is found in the area east of the landfill.

Prior to the ROD, investigations of the site included installing borings to evaluate the subsurface conditions at the landfill and in the surrounding areas. Figures 3 and 4 illustrate the boring locations and geologic cross section A-A' through the area.

The Navy prepared a detailed design to cap the landfill in 2005 (Tetra Tech 2005a, 2005b) and revised the design in 2006 (Tetra Tech 2006a, 2006b). The cap construction was planned to occur during summer 2006 and was initiated at that time. When construction began, the surface of the landfill was stripped of vegetation prior to preliminary grading. On June 15, 2006, and again on July 6, 2006, munitions and explosives of concern (MEC) were found in soil excavated as part of construction activities for the landfill cap. Subsequently, Travis Air Force Base Explosives Ordnance Disposal (EOD) personnel were called to perform emergency response. Travis EOD personnel identified the objects as World War II-era "Hedgehog" depth rockets: one part of a broken open Hedgehog depth rocket, and the other an intact Hedgehog depth rocket. According to experts from the Naval Ordnance Safety and Security Activity (NOSSA), a fully intact Hedgehog depth rocket has 33 pounds of C-2 high explosives. Travis EOD personnel exploded the partial depth rocket in place and x-rayed the intact depth rocket, but were unable to verify whether it contained high explosives. They subsequently transported the intact depth rocket off site for disposal. The discovery of these objects led to a stop work order from the Navy.

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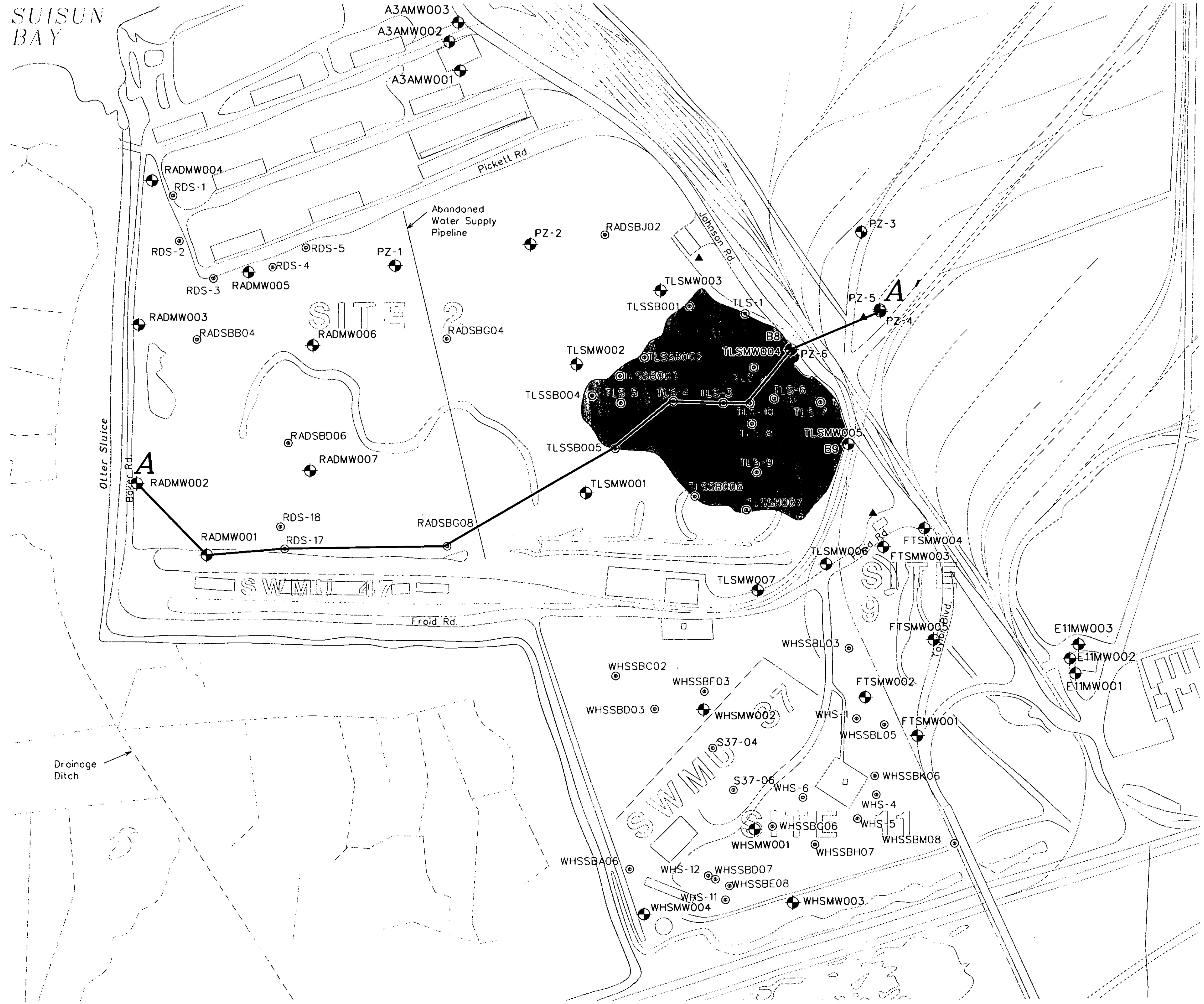

SUISUN BAY
A3AMW003
A3AMW002
A3AMW001
Pickett Rd
RADMW004
RDS-1
RDS-2
RDS-3
RDS-4
RDS-5
RADMW005
Abandoned Water Supply Pipeline
PZ-1
PZ-2
RADSBJ02
Johnson Rd.
PZ-3
SITE 2
RADMW003
RADSBB04
RADMW006
RADSBG04
TLSMW003
TLSSB001
TLS-1
PZ-5
A′
PZ-4
B8
TLSMW004
PZ-6
TLSMW002
TLSSB002
TLSSB003
TLSSB004
TLS-5
TLS-4
TLS-3
TLS-6
TLS-10
TLS-7
TLS-8
TLSMW005
B9
TLS-9
TLSSB005
TLSMW001
TLSSB006
TLSSB007
RADSBD06
RADMW007
Otter Sluice
Boker Rd.
A
RADMW002
RDS-18
RDS-17
RADMW001
RADSBG08
SWMU 47
Froid Rd.
TLSMW006
TLSMW007
Froid Rd
FTSMW004
FTSMW003
SITE 9
Taylor Blvd.
FTSMW005
E11MW003
E11MW002
E11MW001
WHSSBL03
WHSSBC02
WHSSBF03
WHSSBD03
WHSMW002
SWMU 37
FTSMW002
WHS-1
WHSSBL05
FTSMW001
S37-04
S37-06
WHS-6
WHSSBK06
WHS-4
SITE 11
WHS-5
WHSSBG06
WHSMW001
WHSSBH07
WHSSBM08
WHSSBA06
WHS-12
WHSSBD07
WHSSBE08
WHS-11
WHSMW004
WHSMW003
Drainage Ditch

LEGEND

TLSMW002	MONITORING WELL LOCATION
PZ-X	PIEZOMETER LOCATION
◎	SOIL BORING LOCATIONS
▲	PROPOSED LANDFILL GAS PROBE LOCATION

N

200 0 200 400
SCALE IN FEET

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FIGURE 3
SOIL BORING LOCATION PLAN

Explanation of Significant Differences,
Landfill Cap Redesign, IR Site 1, Tidal Area Landfill

R Area Disposal Site
Site 2

Tidal Area Landfill
Site 1

A

A'

ELEVATION IN FEET

15
10
5
MSL 0
-5
-10
-15
-20

RADMW002
RADMW001
RDS-17
RADSBC08
TLSMW001 (PROJECTED)
TLSSB005
TLS-4
TLS-10
TLSMW004
PZ-6
PZ-5
PZ-4

Intersection with B-B'

JOHNSON ROAD

JANUARY 29, 1996 WATER LEVELS

OCTOBER 16, 1995 WATER LEVELS

COARSE ROAD FILL
SILTY SANDY CLAY
Brown CLAY
CLAYEY SAND
V. Dk. Brown SILTY CLAY
Olive Gray CLAY
Lt Brown CLAYEY SAND w/pebbles
Gray SILTY CLAY, soft
Tan SILTY SAND w/pebbles
Gray SILTY CLAY
V. Dk. Brown SILTY CLAY
Olive Brown SILTY CLAY Stiff
V. Dk. Brown SILT, soft, w/peat
Dk Gray SILT, soft
LANDFILL MUNICIPAL WASTE AND SOIL
Black PEAT
Black SILTY CLAY, soft
Black PEAT
V. Dk. Brown SILTY CLAY, med. stiff, w/peat
Black SILTY CLAY, soft, w/wood
Dark Gray SILTY CLAY
Brown SILTY CLAY stiff
Brown SILTY SAND very fine
Tan SILTY CLAY
Tan SILTY SAND
Tan SILTY CLAY Very stiff
Tan SILTY SAND, Stiff
Tan CLAYEY SILT, very stiff
GRAVEL
SAND, w/SILT, CLAY & GRAVEL
Dk Gray SILTY CLAY
Tan SILTY CLAY, plastic
Brown SAND, fine to med., loose
Tan SILTY CLAY, very stiff

LEGEND:

SOIL BORING OR MONITORING WELL

SCREEN INTERVAL FOR MONITORING WELL OR PIEZOMETER

NOTES:

THIS CROSS SECTION REPRESENTS ONE ITERPRETATION BASED ON AVAILABLE DATA, OTHER INTERPRETATIONS ARE POSSIBLE

WATER LEVELS BETWEEN WELLS ARE INTERPOLATED

PROJECTED WELLS SHOW SCREENED INTERVALS BUT NOT LITHOLOGY

0 150 300
FEET
HORIZONTAL SCALE

VERTICAL SCALE = 20 X HORIZONTAL SCALE

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FIGURE 4
GEOLOGIC CROSS SECTION A-A'

Explanation of Significant Differences,
Landfill Cap Redesign, IR Site 1, Tidal Area Landfill

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The stop work order was eventually lifted to allow winterization activities that were less intrusive than the former grading activities. On October 5, 2006, additional MEC consisting of an MK 29 point-detonating nose fuze for a 5-inch projectile and various munitions debris, including unfired and fired flash and burster tubes, and flare cartridges were discovered by the on-site unexploded ordnance technician. The discovered MEC were detonated in place by Army explosive ordnance disposal personnel.

3.0 ORIGINAL LANDFILL CAP DESIGN AND MODIFICATION

To protect human health and the environment, the Navy designed a landfill cap in accordance with the ROD for Site 1. The ROD documented the selected remedy based on EPA guidance and the following remedial action objectives (Navy 2004).

- Protect human health and environmental receptors from contact with landfill contents.
- Protect human health and the environment from exposure to leachate.
- Protect human health and the environment from subsurface landfill gas migration.

The conceptual site model for the IR Site 1 landfill encompasses migration pathways for the potential movement of chemicals from the landfill waste through soil, groundwater, or surface water to humans and animals. The migration pathways for contaminated soil include erosive action by wind or surface water or through leachate migration to groundwater. Erosion occurs when the wind or surface water has sufficient momentum to dislodge and carry soil particles. In accordance with EPA guidance (EPA 1993, 1996), the Navy followed the presumptive remedy approach for the IR Site 1 landfill. The presumptive remedy for landfill remediation includes construction of a cap. The cap selected in the ROD was intended to effectively eliminate windborne and surface water erosion of chemicals or waste from the landfill surface and to isolate waste from human and animal contact.

The presumptive remedy cap described in the ROD addresses control of precipitation that presently infiltrates through the landfill. Leached chemicals, if present, may discharge from groundwater to surface water. The landfill cap selected in the ROD included construction of a 2-foot-thick foundation layer, a 1-foot–thick low-permeability clay layer, a biotic barrier layer, and any 1-foot-thick layer of topsoil. The original RD was prepared based on the requirements of the ROD (Tetra Tech 2005a, 2005b).

The selected remedy included waste consolidation. The intent of the waste consolidation was to minimize the volume of imported soil while creating grades that promote surface drainage. In addition, the waste consolidation effort minimized the surface area and successfully held the new footprint of the landfill to the same dimensions as the existing landfill. The landfill consolidation thus prevented any enlargement of the landfill footprint. The proposed waste consolidation included dewatering the excavation area; excavating waste on the perimeter of the landfill; relocating the waste to the central portions of the landfill; and constructing a perimeter containment dike for the landfill waste, the foundation layer of soil, and the landfill cap itself.

After the ROD was signed, the Navy and the EPA decided to substitute a linear low-density polyethylene synthetic membrane cover for the 1-foot-thick low-permeability clay layer to further limit rainwater infiltration (Tetra Tech 2006a, 2006b). This substitution was based on subsequent testing of the hydraulic conductivity of the underlying Bay Mud. In addition, another 6 inches of fill was specified for the vegetative soil cover. The original design included a low permeability clay dike that was eliminated in favor of the linear low-density polyethylene membrane cover. These changes were considered minor and insignificant, with little to no impact on the overall scope, performance, or cost of the selected remedy (EPA 2006).

4.0 DESIGN CHANGES

The Navy plans to eliminate all excavations at the site to minimize risk of explosion from unexploded ordnance within the landfill. The Navy's ban on future excavation at the site necessitates a modification of the design, which previously relied upon excavation for the purpose of waste consolidation. The modified design includes placement of additional fill and the consequent enlargement of the landfill footprint. These changes will enhance the safety and reduce overall risk to site workers. This section explains the reasons for this design change.

The original design relied in large part on the relocation of waste to minimize the landfill footprint. The discovery of MEC within the IR Site 1 landfill resulted in a reevaluation of the original RD. Relocation of wastes presents an explosion hazard if MEC is present. Because unanticipated MEC was found, other MEC items might be present within the landfill. Any MEC currently present in the IR Site 1 landfill presents minimal, if any, danger as long as it is not disturbed.

In order to adhere to the original RD, significant additional work and time would be necessary to proceed safely. In this case, after excavation all materials would require inspection for absence of MEC prior to approval for reconsolidated or off-site disposal. Inspection activities would also disturb the waste because the materials would have to be removed from the excavator bucket and spread on the ground. At this stage, if MEC were found specialized handling would likely be necessary thus causing additional delays. Any activities involving the relocation or handling of MEC would require various risk reduction techniques.

Because risk reduction techniques for MEC involve thoroughly screening all material excavated, such work is very slow and expensive relative to conventional excavation. In addition, expensive specialized construction equipment or equipment modifications would be required to achieve the necessary risk reduction. The added cost and risk of implementing the remedy as originally designed did not justify the reduction in landfill footprint that is achieved by that design. Although the redesigned cap described in this ESD is larger and more costly in terms of materials than the original design (see Section 4.5), the redesigned landfill cap is expected to be substantially less costly than excavation and clearing of all waste while using MEC risk reduction techniques.

To avoid the risks and risk reduction costs associated with excavation of potential MEC in the original RD, the Navy has prepared a revised landfill cap design that avoids the relocation of

existing waste. Plans for the revised landfill design are presented in Appendix B, and the revised project specifications are presented in Appendix C.

The changes to the landfill cap design have influenced the overall footprint of the landfill, the amount of anticipated surface settlement at the landfill, the slope stability of the landfill, and the cost of the project. The significance of each of these changes is discussed in the following sections.

Post–ROD changes are generally described as minor, significant, or fundamental (EPA 1999). The changes described in this ESD are considered significant, but not fundamental, changes to the remedy outlined in the ROD because the nature and protectiveness of the remedy has not changed. In addition, the changes do not trigger any additional applicable or relevant and appropriate requirements beyond those discussed in this ESD. Changes documented herein are officially recorded in the administrative record file by means of this ESD. Because the changes are considered significant under CERLA, public notice is required to announce the availability of this ESD to members of the public. Public notice will be provided in accordance with 40 CFR § 300.435(c)(2)(i). However, there are no requirements for a public comment period or public meeting and no amendment to the ROD is necessary.

4.1 LANDFILL SURFACE AREA

The existing landfill surface is uneven and does not promote drainage of rainwater from the landfill surface. The landfill surface cannot be covered with the proposed geomembrane cover in its existing state without first providing a sloping foundation layer that will support the overlying cap and result in a final landfill surface that promotes surface water drainage.

The Navy prohibits all future excavation of the landfill surface because of the potential risk involved with MEC. Waste relocation was formerly proposed to create a landfill cap surface that minimized infiltration while limiting the additional fill required, but this alternative is no longer viable. As a result, surface grades that drain must now be constructed by placing fill only. Therefore, considerably more imported fill will be required to bridge the low areas and maintain positive drainage from the cap. The prohibition on waste relocation also prevents removal of waste at the landfill perimeter and other high spots. Sufficient fill must therefore be placed to create a hill with uniform slopes. These have been designed at an interior 3-percent grade and with perimeter slopes at 10 percent. In addition to requiring substantially more fill, the redesign will require a cap with a larger footprint to cover waste in the low areas that were previously to be consolidated. The increased footprint will extend beyond the existing waste into areas that previously were not filled. New fill will be placed to the north, west, and south of the existing landfill footprint. The enlarged landfill footprint will now encroach on surrounding surface water areas to the north, west, and south. The former footprint of the landfill covered 12.5 acres. The new landfill footprint will cover 15 acres. The expanded landfill footprint is shown on Figure 5. Approximately 2.5 acres of new fill will be placed in the wetland that is part of IR Site 2 (Figure 2).

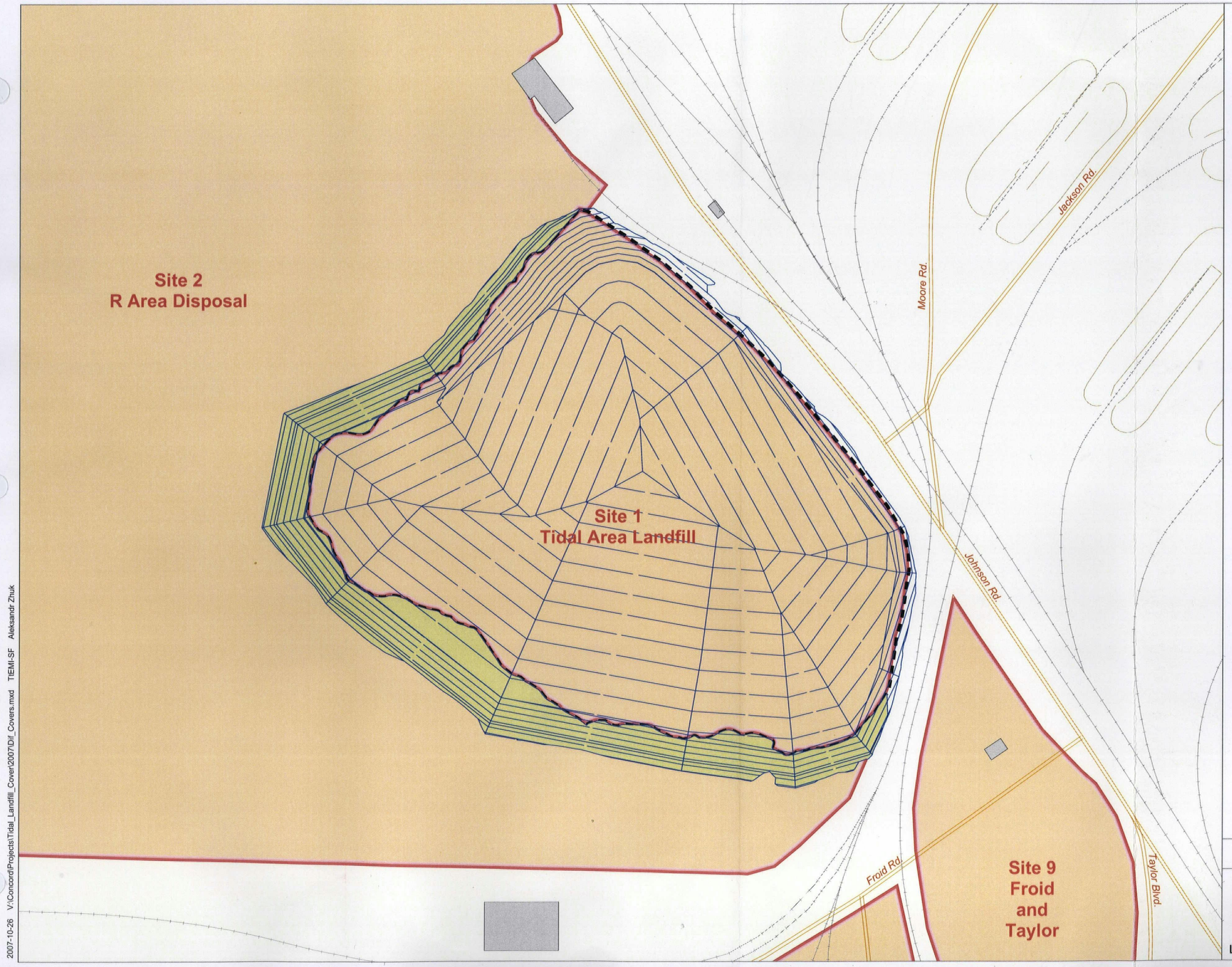

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FIGURE 5
EXPANDED LANDFILL COVER MAP

Explanation of Significant Differences,
Landfill Cap Redesign, IR Site 1, Tidal Area Landfill

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The Bay Conservation and Development Commission (BCDC) has jurisdiction of areas subject to tidal action as defined in the McAteer-Petris Act. The Navy is not required to obtain a permit under CERCLA § 121(e); however, the Navy will meet the substantive requirements of McAteer-Petris Act. Under the Coastal Zone Management Act, federal agencies are generally required to carry out activities and programs in a manner consistent with BCDC's coastal management program. To implement this provision, federal agencies are generally required to make consistency determinations on proposed activities, and BCDC would have the opportunity to review the work. This ESD satisfies the documentation requirements for a consistency determination. The Navy contacted BCDC to alert them that a copy of the ESD was transmitted to their offices.

The Navy is also required to meet the substantive requirements of Clean Water Act § 404 because fill must be placed in the existing wetland habitat. Clean Water Act § 404 prohibits the discharge of dredged or fill material if there is a practicable alternative to discharge that would have less impact on the wetland. Where there are no practicable alternatives, as in this case, appropriate mitigation measures must be taken to minimize any potential adverse effects. The Navy's plans for mitigation are discussed in Section 4.9 of this document.

The Navy will comply with the applicable or relevant and appropriate substantive provisions of the § 404(b)(1) guidelines, which are set forth in 40 CFR Part 230 et seq., and with the applicable or relevant and appropriate regulations of the U.S. Army Corps of Engineers (USACE) set forth at Title 33 CFR Parts 320-330. These guidelines set forth the substantive environmental criteria used in evaluating activities regulated under Clean Water Act § 404 and are described in more detail in Appendix F.

Although under CERCLA § 121(e) the Navy is not required to obtain a permit, the Navy will meet the substantive requirements of Nationwide Permit 38. This permit allows for fill to be placed in surface water or wetlands areas, if filling is associated with the remediation of hazardous and toxic waste. The substantive provisions are described in more detail in Appendix F. Appendix F also identifies Clean Water Act § 401 and the Rivers and Harbors Act as ARARs.

4.2 FILL COMPACTION

Activities that do not include excavation of waste are relatively less disruptive and less costly. Even without excavation, potential MEC poses some risk as described below. Disturbance of potential MEC can occur as the result of pressure applied during placement and compaction of the various fill and synthetic materials comprising the cap and its supporting soil fill. The potential for disturbance of potential MEC is minimized by the existing soil fill that presently covers waste at the site. In addition, for proposed imported fill, modification of fill compaction techniques can be used to reduce the pressure associated with vehicular compaction equipment. To minimize pressure, the revised design specifies the first foot of fill shall be spread in a 1-foot-thick lift rather than an 8-inch-thick lift. The thicker first lift of fill would reduce the direct pressure associated with operating soil compaction equipment.

4.3 LANDFILL SETTLEMENT

On average, elimination of excavation from the RD has resulted in a thicker layer of landfill cap foundation materials, and the overall height of the landfill has increased by 3 feet. These changes will alter settlement of the landfill. The additional fill will increase the weight of the cap, and the increased weight will cause additional consolidation of the compressible underlying Bay Mud soils. The surface of the landfill is expected to undergo more settlement because of the revised RD. Appendix D includes calculations of the estimated settlement of the surface of the landfill. Although the landfill surface is expected to experience up to 26 inches of settlement under the maximum landfill height, the landfill design accounts for this by including an initial 3-percent slope. Differential settlements are not anticipated to reverse flow patterns or flatten grades to the extent that rainwater would not readily flow from the site.

4.4 SLOPE STABILITY

The changes in grade will alter the static and dynamic (earthquake) stability of the landfill. Revised static and dynamic stability analyses have been completed; results of the analyses indicate the slopes are stable under static conditions and are not expected to suffer permanent deformation as a result of seismic shaking. Details on the stability analysis are presented in Appendix E.

4.5 CONTAINMENT DIKE

The original RD required a dike to contain waste excavated from the perimeter of the landfill and replaced at an interior location. Now that waste excavation is prohibited, the containment dike is no longer necessary to contain and support the waste at its perimeter. The existing waste tapers at the landfill perimeter, and a more gradual transition occurs than with the original RD. Because the dike is not needed for lateral support, it has been eliminated from the RD.

The landfill cover (including the linear low-density polyethylene membrane) in the original RD covered the dike and extended down to tie into the same relatively impervious natural sediments underlying the landfill. With the revised RD, the cover still extends down to tie into the relatively impervious sediments but there is no dike inboard of the cover. The elimination of the containment dike does not change the degree of hydraulic isolation achieved because the tie-in to natural and relatively impervious soils below the landfill is similar in either case.

4.6 PROJECT COST

Redesign of the project has increased the surface area of the cap and has therefore increased the quantity of imported fill that must be brought to the site and then placed as compacted fill. The Navy's contract for landfill construction under the previous design was for $2,970,000, including future costs and costs to date for construction and delays and modifications beyond the construction contractor's control. The revised RD requires 143,000 cubic yards of imported fill

and has a total surface area of 643,000 square feet (15 acres). The area of the geosynthetic liner, filter fabric (two layers), and synthetic biotic barrier layer is 543,000 square feet (12.5 acres). The estimated total cost of construction at this time, including costs to date (including the delay costs) plus the estimated cost to complete, is $5,250,000. The additional estimated cost resulting from the redesign is $2,280,000.

4.7 PROTECTIVENESS OF THE REMEDY

The redesign does not change or alter the scope of the selected remedy, and the redesign is still consistent with the EPA's presumptive remedy guidance.

The design elements (layers) of the cap have not been altered, and the redesigned landfill cap bears many similarities with the prior design. The landfill cap entirely covers the surface of the landfill, provides a low-permeability geomembrane layer, limits infiltration, and promotes the flow of rainwater off of the landfill surface. The revised RD changes have not altered the long-term protectiveness of the selected remedy because the design layers have not been altered and because the revised design still covers the existing landfill in its entirety.

The Navy's prohibition on waste relocation offers short-term protection to human health by minimizing MEC explosion risk during construction. NOSSA is responsible for establishing the Navy's policy for this landfill that prohibits all intrusive activities such as waste excavation or relocation. NOSSA is also involved in the review of the proposed procedures for spreading and compacting landfill cap materials. These steps are intended to mitigate the risk of MEC explosion risks during construction. The revised RD prohibits all construction activities considered to be intrusive including excavations which might unearth, strike, or directly shear potentially live ordinance.

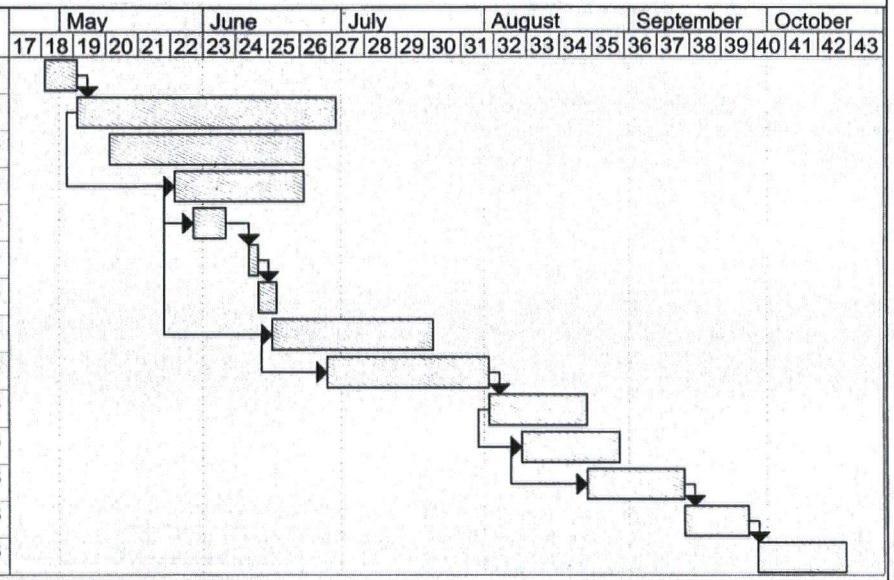
After the landfill cap construction has been completed, long term engineering controls will prevent disturbance of the cap and all underlying materials including the landfill waste including any MEC which may be buried as a part of the waste. A Land Use Control Remedial Design (LUC RD) has been prepared and is presented in the May 13, 2005 Draft Final Closure Plan and Post-Closure Maintenance Plan for the Site 1 Tidal Area Landfill (Tetra Tech 2005c). The LUC RD will assure that the waste is not disturbed in the future.

4.8 SCHEDULE

Construction of the project is scheduled to resume in May 2008. An estimated schedule is presented on Figure 6.

FIGURE 6
PRELIMINARY SITE 1 LANDFILL CAP PROJECT SCHEDULE
Naval Weapons Station Seal Beach Detachment Concord

ID	Task Name	Duration	Start
1	Mobilize	1 ewk	Mon 4/28/08
2	Site Dewatering	8 ewks	Mon 5/5/08
3	Import Fill	6 ewks	Mon 5/12/08
4	Place Fill in Marsh Areas	4 ewks	Mon 5/26/08
5	Place Fill for Temporary Road to New Monitoring Wells	5 days	Fri 5/30/08
6	Construct 3 new monitoring wells (Tetra Tech)	2 days	Wed 6/11/08
7	Remove Fill for Temporary Road to Wells	2 days	Fri 6/13/08
8	Spread and Compact Fill over Landfill Surface	5 ewks	Mon 6/16/08
9	Finish Grade Foundation Fill Layer	5 ewks	Fri 6/27/08
10	Place cover materials (geotextiles and geomembrane)	3 ewks	Fri 8/1/08
11	Spread and Compact 12" General Fill	3 ewks	Fri 8/8/08
12	Spread and Compact 6" Topsoil	3 ewks	Fri 8/22/08
13	Site Revegetation	2 ewks	Fri 9/12/08
14	Demobilize	3 wks	Mon 9/29/08



Date: Wed 1/16/08

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

4.9 WETLAND MITIGATION

The EPA, the Water Board, and the California Department of Fish and Game have each expressed an interest in Navy mitigation for the loss of wetland habitat by repairing tide gates and levees in the vicinity of Site 1. The objective of the repair work is to create a pickleweed (*Salicornia virginica*) marsh environment for the benefit of the salt marsh harvest mouse (*Reithrodontomys raviventris*). A pickleweed marsh covered much of area surrounding the landfill (Site 2) prior to the failure of the Otter Slough tide gate and Baker Road levee. The regulatory agencies would like the area to be restored as a pickleweed marsh, similar to what was present in the early 1990s. The Navy plans to work with EPA, the Water Board, U.S. Fish and Wildlife Service, and California Department of Fish and Game on mitigation for the loss of habitat delineated from the expanded footprint of the landfill. To this end, the Navy and the Army have committed to repair of tide gates and levees pending the completion of appropriate studies to establish design objectives and prepare the designs themselves.

The Navy anticipates the necessary studies cannot be completed before the 2008 construction season for building the landfill cap because of the complexity of the environment in the Tidal Area and the far-reaching effects of the proposed improvements. The selection and implementation of the landfill cap project is not contingent upon simultaneous identification and construction of mitigation improvements and the Navy intends to construct the landfill cap as soon as practicable. The Navy intends and is obligated to comply with the substantive requirements of Section 404 and other ARARs identified for the project that require mitigation for loss of wetland habitats at the perimeter of the landfill.

5.0 AFFIRMATION OF THE STATUTORY DETERMINATIONS

It is the determination of the Navy, the EPA, and the State of California that this modified remedy continues to satisfy the statutory requirements of cleanup under CERCLA § 121. Considering the information that has been developed during implementation of the remedy and the proposed changes to the selected remedy, the Navy, EPA, DTSC, and the Water Board believe that the remedy will remain protective of human health and the environment, will comply with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and will be cost effective. In addition, the revised remedy will continue to use permanent cleanup solutions to the maximum extent practicable.

6.0 DECLARATION

The issuance of this ESD for Site 1, Tidal Area Landfill, at NAVWPNSTA Seal Beach Detachment Concord, in Concord, California, is concurred with and recommended for immediate implementation.

J.D. Kurtz
Captain, U.S. Navy
Commanding Officer
Naval Weapons Station Seal Beach

4-23-08
Date

Michael Montgomery
Chief, Federal Facilities and Site Cleanup Branch
U.S. Environmental Protection Agency Region 9

5/8/08
Date

Anthony J. Landis, P.E.
Supervising Hazardous Substances Engineer II,
Cal Center Cleanup Program
California Environmental Protection Agency
Department of Toxic Substances Control

Date

Bruce Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board

Date

7.0 REFERENCES

SulTech. 2006. "Draft Groundwater Investigation Data Submittal, Tidal Area Landfill, Site 1, Naval Weapons Station Seal Beach Detachment Concord, Concord, California." December 26.

Tetra Tech EM Inc. (Tetra Tech). 2003. "Revised Draft Final Remedial Investigation, Tidal Area Sites 2, 9, and 11, Naval Weapons Station Seal Beach Detachment Concord, Concord, California." August 8.

Tetra Tech. 2005a. "Naval Weapons Station Seal Beach Detachment Concord, Concord, California, IR Site 1 – Tidal Area Landfill Cover Final Remedial Design Drawings." May 6.

Tetra Tech. 2005b. "Final (100%) Remedial Construction Specifications, Landfill Cover, Tidal Area Landfill, Site 1, Naval Weapons Station Seal Beach, Detachment Concord, Concord, California." June 16.

Tetra Tech. 2005c. "Draft Final Closure Plan and Post-Closure Maintenance Plan for the Site 1 Tidal Area Landfill, Naval Weapons Station Seal Beach, Detachment Concord, Concord, California." May 13.

Tetra Tech. 2006a. "Naval Weapons Station Seal Beach Detachment Concord, Concord, California, IR Site 1 – Tidal Area Landfill Cover Final Remedial Design Drawings." April 28.

Tetra Tech. 2006b. "Revised Final (100%) Remedial Construction Specifications, Landfill Cover, Tidal Area Landfill, Site 1, Naval Weapons Station Seal Beach, Detachment Concord, Concord, California." February 22.

Tetra Tech. 2007a. "Draft Technical Memorandum Landfill Cap Redesign, Site 1 Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord, Concord, California." March 5.

Tetra Tech. 2007b. "Draft Site Inspection Work Plan for the Tidal Area MMRP Sites 7 (EOD Above Area Q), 8 (Port Chicago Tidal Area), and 10 (Suisun Bay Impact Area), Naval Weapons Station Seal Beach Detachment Concord, Concord, California." October 12.

U.S. Department of the Navy (Navy). 1944a. "Report of Travel, Port Chicago, California, Colonel Crosby Field." July.

Navy. 1944b. "Report of Investigation of Explosion. Naval Magazine Port Chicago, California." September 6.

Navy. 2004. "Final Record of Decision, Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord, Concord, California." July.

U.S. Environmental Protection Agency (EPA). 1993. "Presumptive Remedy for CERCLA Municipal Landfill Sites." EPA 540/F-93/035. September. Available Online at: <http://www.epa.gov/superfund/policy/remedy/presump/clms.htm>.

EPA. 1996. "Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills." EPA/540/F-96/020. December. Available Online at: <http://www.epa.gov/fedfac/documents/1296mem.htm>.

EPA. 1999. "A Guide To Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents." EPA-540-R-98-031. July. Available Online at: <http://epa.gov/superfund/policy/remedy/rods/index.htm>.

EPA. 2006. Letter Regarding Review of Tidal Area Landfill Design Change Determination (w/ enclosures). From Phillip Ramsey. To L. Chung, Naval Facilities Engineering Command Southwest, Desert Integrated Product Team. May 22.

APPENDIX A
NAVY RESPONSES TO REGULATORY AGENCY COMMENTS ON THE DRAFT TECHNICAL MEMORANDUM LANDFILL COVER REDESIGN, IR SITE 1, TIDAL AREA LANDFILL

DRAFT RESPONSES TO REGULATORY AGENCY COMMENTS ON THE DRAFT TECHNICAL MEMORANDUM LANDFILL COVER REDESIGN IR SITE 1, TIDAL AREA LANDFILL, NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, CONCORD, CALIFORNIA

This document presents the U.S. Department of the Navy's (Navy) responses to comments received from the regulatory agencies on the "Draft Technical Memorandum Landfill Cover Redesign, Installation Restoration [IR] Site 1, Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord; Concord, California," dated March 5, 2007. The comments addressed below were received from the U.S. Environmental Protection Agency (EPA) on April 6, 2007; the California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC) on April 30, 2007; and from the Cal/EPA San Francisco Bay Regional Water Quality Control Board (Water Board) and Department of Fish and Game Office of Spill Prevention and Response (DFG-OSPR) on March 30, 2007.

As indicated in the following responses to comments, the draft technical memorandum has been revised with the necessary content to satisfy the requirements of an explanation of significant differences (ESD). The ESD document will be issued to the public and regulatory agencies as a draft final ESD. The Navy will submit a public notice to the *Contra Costa Times* to announce the availability of the final ESD document.

RESPONSES TO COMMENTS FROM EPA

Major Comments

1. **Comment** **The Navy must prepare an explanation of significant differences (ESD) to document the changed remedy in this instance. The Navy has suggested that the proposed modification to the landfill cap constitutes a "minor change to the remedy outlined in the ROD because the nature and protectiveness of the remedy has not changed" and that it will therefore document the change in a memorandum to the administrative record file (Section 4.0, p12). Although EPA agrees that the overall nature and protectiveness of the remedy has not changed, EPA cannot agree that the change to the remedy is minor or that it can be sufficiently documented in a memorandum. The revision calls for filling a portion of a wetland, and, although that intrusion does not involve a large area, its impact is significantly different from the original remedy. As described in EPA's guide to preparing decision documents, "significant changes" that must be documented in an ESD "generally involve a change to a component of a remedy that does not fundamentally alter the overall cleanup approach," much like the proposed modification to the Site 1 remedy. *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents, EPA 540-R-98-03, at***

7-2 (July 1999). **The examples of significant changes in the guide include changes that involve a large cost increase and a need to change the ARARs, just as the changed remedy at Site 1 will entail. *Guide* at 7-3.**

Response: The Navy has prepared an ESD document as requested.

2. **Comment** **As the Navy has already noted in Appendix D., filling a wetland requires consideration of new ARARs. ARARs cannot be modified through a memorandum to file, nor is the "Summary of Wetlands Regulations" in Appendix D a sufficient discussion of the newly applicable ARARs. EPA has the following preliminary and request for the Navy regarding its ARARs discussion:**

- **Please identify the Clean Water Act itself and Section 404 thereof, 33 U.S.C. §1344.**
- **Clarify that Executive Orders 11988 and 11990, while remaining "to be considered," are in fact selected requirements for this remedy (which now affects a floodplain and wetland) that the Navy must comply with in implementing the revised remedy.**
- **Identify the Rivers and Harbors Act. 33 U.S.C. §§401-413, or provide an explanation as to why they are not applicable or relevant and appropriate.**
- **Identify whether the referenced regulations are applicable or relevant and appropriate and which are the "substantive provisions" of the identified regulation that it believes it must comply with.**
- **In the text of the technical memorandum the Navy states that the federal agencies can be required to make "consistency determinations." Please change "can be" to "are."**

EPA anticipates that it will have further comments on ARARs, once the Navy has developed an ESD.

Response: The Navy has prepared the ESD document as requested. The ESD document incorporates the following changes:

- The Record of Decision (ROD) discussed the Clean Water Act Section (§) 404. Although discharge of dredged or fill material to wetland habitat was not planned as part of the response action, the Navy stated it would comply with § 404 if any response action at the site triggers the requirements of the section. The ESD document identifies § 404 as an applicable or relevant and appropriate requirement (ARAR) and includes an ARARs table in the document.

- The Navy identified Executive Orders 11988 and 11990 as to-be-considered (TBC) criteria in the ROD. The Navy intends to comply with these orders during implementation of the remedy.
- The Navy has included the substantive provisions of the Rivers and Harbors Act, Title 33 United States Code (U.S.C.) §§ 401-413, and the regulations at Title 40 Code of Federal Regulations (CFR) Part 322 as ARARs in the ESD document. The Navy has consulted with the U.S. Army Corps of Engineers to ensure compliance with Section 10 of the Rivers and Harbors Act.
- The Navy has prepared an ARARs table similar to the tables prepared in the ROD for the regulations identified in the ESD document. This table summarizes the substantive provisions and states whether the requirement is "applicable" or "relevant and appropriate."
- The text has been changed to state that "federal agencies are generally required to make consistency determinations."

Specific Comments

1. **Comment:** **Section 2.0, Site Conditions and Background, Page 5: Geologic cross-sections are referenced in Figures 4 and 5. Although the cross-sections cut across the Tidal Area Landfill, no wastes are shown in the landfill sections. The only wastes shown on these figures are decayed wood chips in the Wood Hogger area, several hundred feet southeast from the landfill, in Figure 5. Only silty clay, sand and gravel with wood, and other soils are shown in the landfill sections. These descriptions are not consistent with the previous (page 3) description of the landfill contents as 125,000 to 135,000 cubic yards of municipal wastes and cover soil. Please revise the soil descriptions in the landfill zone on these figures to accurately describe the buried wastes.**

   Response: Two of the borings plotted on the cross sections are located within the landfill (TLS-4 and TLS-10), and both of these borings appear on Figure 4, Geologic Cross Section A-A'. Figure 4 has been revised to indicate the extent of landfill waste near these two borings. Figure 5, Geologic Cross Section B-B', does not include any borings that actually penetrate the landfill waste. Figure 5 has been removed from the ESD document rather than modifying the figure based on interpolation of the extent of waste from distant data points.

2. **Comment:** **Section 3.0, Initial Landfill Cap Design and Modification, Page 10: The description of the previous consolidation plans includes constructing an internal containment dike. This feature has apparently been eliminated from the revised design, but is not**

specifically mentioned in this section or the following Design Changes section. Please revise the text to clarify if the containment dike has been eliminated from the plans.

Response: The text has been revised to discuss this design change, as requested.

3. **Comment** **Section 4.5, Protectiveness of the Remedy, Page 15: The second sentence in the second paragraph in this section states that: "The landfill cap entirely encapsulates the surface of the landfill..." This is not an accurate description of the proposed cover. Encapsulation of the landfill surface would require wrapping the cover/liner around the surface, both below and above the surface. The proposed cover system will certainly entirely cover the landfill, as stated later in this paragraph, but will not encapsulate the landfill or the landfill surface. Please replace the word "encapsulates" with the word "covers."**

Response: The text has been revised as requested.

4. **Comment** **Section 4.5, Protectiveness of the Remedy, Page 15: One potential long-term concern that is not addressed in this section or in the design is the effect of sea level rise. As shown in Drawings C-100 and C-101, the toe of the south and west sides of the soil cover will be approximately 1 foot above sea level. The north and east side toes will be approximately 5 to 6 feet above sea level. According the U.S. Geological Survey Fact Sheet 175-99 (http://pubs.usgs.gov/fs/1999/fs175-99/) the Fort Point gauging station next to the Golden Gate Bridge has recorded sea level increases averaging 0.04 to 0.08 inches per year since 1900. This rate may accelerate during the next 100 years. In addition to rising sea level, abnormally high tides are not unknown in the San Francisco Bay region. The same USGS Fact Sheet notes the occurrence of high tide at 5 feet above mean sea level on February 3, 1998, due to the El Nino that year. Although the extent of sea level rise is uncertain, extreme high tides accompanied by wind storms and heavy wave action can be confidently predicted to occur several times during the 30 to 50 year design life of the cover proposed for the Tidal Area Landfill. Please address the long-term stability of the proposed cover considering sea level rise, and under abnormal high tide (5 ft. AMSL) and wind storm conditions.**

Also, long term maintenance of this cap is important to the protectiveness of this remedy; to that end it may be beneficial to conduct inspections of the land fill cap subsequent to major storm events. Please consider an inspection schedule that would include cap integrity inspection following significant local storm events, specifically when and if the adjacent site (Site 2) floods.

Response: Covering the landfill waste with a relatively impermeable synthetic barrier from above combined with the relatively impermeable natural geology from below is intended to provide hydraulic isolation of the waste from the surrounding environment. Because of the hydraulic isolation of the waste, significant groundwater flow is not expected under the cyclic diurnal tide conditions, which will exert only relatively low water pressures. Extreme tides driven by low atmospheric pressure or flooding are of short duration and are also not expected to have significant impact. Sea level rise, although persistent, is gradual and is not expected to result in any significant persistent hydraulic gradient at the site. The groundwater monitoring program is intended to monitor the surrounding area to verify there are no impacts from contaminated leachate. The landfill design accounts for short-term tidal fluctuations, flooding, and the persistent rise in sea level.

The maximum fetch for generation of waves from the west is approximately 1,500 feet. Under persistent winds of 60 mph, wind-generated waves of 1.0 foot are anticipated. The relatively flat (10 percent) perimeter slopes with an established vegetative cover are designed to resist this level of minor wave action. Frequent monitoring and temporary erosion control measures are recommended during the post-construction time while vegetation is becoming established.

The ROD includes the following discussion (Navy 2004[1]), and the landfill cover has been designed accordingly:

CIWMB [California Integrated Waste Management Board] closure and post-closure maintenance requirements are specified at Title 27 CCR [California Code of Regulations] 21140(a)(b), 21142(a), 21145(a), and 21150(a) and (b). These four sections provide narrative standards that duplicate many of the requirements discussed above from Title 27 CCR 21090. These narrative standards are as follows:

- *Function with minimum maintenance*
- *Provide waste containment to protect public health and safety*
- *Achieve compatibility with post-closure land use*
- *Provide equivalent protection from wind and surface water soil erosion as an erosion layer that contains a minimum of 6 inches of earthen material capable of sustaining native plant growth*

Title 27 CCR 21130 requires that the operator maintain a written post-closure emergency response plan that identifies occurrences that may exceed the site design and endanger public health or the environment. The plan must describe specific procedures that minimize these hazards to

[1] Navy. 2004. "Final Record of Decision, Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord, Concord, California." July.

protect public health and safety and address vandalism, fires, explosions, earthquakes, floods, the collapse or failure of artificial or natural dikes, levees, or dams, surface drainage problems, and other waste releases. This section is applicable.

The "Draft Final Closure Plan and Post-Closure Maintenance Plan, Site 1 Tidal Area Landfill" (CPPCMP), prepared by Tetra Tech and dated May 13, 2005, specifies that post-closure maintenance will include quarterly inspections of the perimeter of the landfill. Similar to the information presented above in the ROD, the CPPCMP describes the requirements for the Emergency Response Plan, as follows:

As required by CCR Section 21130 of Chapter 3, Subchapter 5, the Navy will maintain a written post-closure emergency response plan at the facility or at an alternative location as approved by EPA and CIWMB. The emergency response plan identifies circumstances that may exceed the design of the site and endanger public health or the environment. The plan describes specific procedures that minimize these hazards to protect public health and safety. The events that the plan addresses include, but are not limited to, vandalism, fires, explosions, earthquakes, floods, the collapse or failure of artificial or natural dikes, levees or dams; surface drainage problems; and other waste releases.

The emergency response plan would be the appropriate document to define the requirements for cap integrity inspection after significant local storm events. The contents of the emergency response plan are described in the CPPCMP but the plan itself has not been developed. Note that IR Site 2 remains flooded throughout the year, so the normal flooded condition of IR Site 2 should not trigger more frequent inspections than the required quarterly interval.

RESPONSES TO COMMENTS FROM DTSC

1. **Comment** **In general we agree with the proposed changes to the design. The technical question we have regards the toe of the landfill. The previous design included a clay dike that presumably helped anchor the landfill cover to the existing grade. This feature is not discussed nor does it appear in the revised technical drawings. Please provide a discussion concerning the design change and how that will affect the design, operation and overall function of the cap.**

   Response: The text has been revised to discuss this design change, as requested.

2. **Comment** **The memorandum states the same construction methodologies will remain in place. Since this is now a MEC site and there were failures with the proposed construction methods used (i.e. aqua block failure), it is presumed that changes and additional precautions are necessary. Please provide a discussion regarding the actual construction methodologies to be used.**

   Response: The failure mentioned in DTSC comment 2 was of the Aqua Dam water structure. The failure was due to leakage from the Aqua Dam and a lack of ongoing maintenance once the munitions and explosives of concern (MEC) were discovered. Because the Navy could not allow the contractors back on the site until the explosion risk had been fully assessed, the Aqua Dam could not be properly maintained. Without maintenance, it deflated and could not perform appropriately.

   Dewatering was used to facilitate placement of fill at the site. Due to the cost and difficulty of dewatering the site, the construction contractor may opt to build a temporary soil levee outside the limits of the landfill. Using this construction technique, dewatering may not be necessary. If the site is dewatered using Aqua Dams or similar techniques, the barrier will require comprehensive maintenance to maximize the efficacy of the barrier.

   Whether or not dewatering is proposed, the Navy will carefully review the construction contractor's proposed construction techniques and scrutinize the maintenance needs of the system prior to any approval of the dewatering system.

RESPONSES TO COMMENTS FROM WATER BOARD

1. **Comment:** **Schedule: We request a revised schedule for the completion of the landfill cap.**

   Response: A revised schedule is included in the ESD document as Figure 6.

2. **Comment:** **Cost Estimate: The projected additional cost due to the redesign is $2.28 million, an increase of almost 80%. We request a more detailed breakdown of why the project cost increased this greatly.**

   Response: The increased cost primarily results from the additional quantity of imported fill, geotextiles, construction contract bonding, and extended duration of the construction contract. Additional cost of delays and extra work associated with the discovery of MEC also contributed to the cost increases.

   The additional fill required amounts to 105,000 cubic yards, at an estimated cost of $ 12.44 per cubic yard to import, place, and compact. The additional fill will cost approximately $1,282,000. The increased footprint of the landfill increases the cost of geotextiles needed for the cover. The footprint of the liner, biotic barrier, and geotextiles is approximately 170,000 square feet larger than the prior design. At a cost of $2.18 per square foot this contributes approximately $370,000 to the cost of the revised design. Significantly more work will be conducted on the mud surface. Work on the mud surface is particularly difficult, resulting in an extra estimated cost of $211,000. Additional bonding due to the increased value of the contract is estimated to be approximately $204,000. An additional mobilization and demobilization is required for the project at an estimated cost of $109,000. The balance of the cost increase is related to a variety of costs, including the cost of delays, increased area for revegetation, and other factors.

3. **Comment:** **Additional fill for the cap: To avoid excavation, considerably more imported fill will be required. We request an explanation of the source and specifications for this fill.**

   Response: The source of the fill has not been determined, but the fill specifications are included in project specifications, which are included as Appendix C to the ESD document. For convenience, the wetland compatible fill specifications are presented below.

2.3 WETLAND COMPATIBLE SOIL

Soil to be placed in designated wetland compatible soil areas shall meet or be amended as required to meet the requirements of Section 2300 above and:

- *Wetland compatible soil shall consist of silty or clayey sands, clay with sand, silt with sand, clay, or silt. Wetland compatible soil shall have less than 70% sand (passing the 200 sieve).*
- *pH = 5.0 to 8.0*
- *Cation exchange capacity = > 15 milli-equivalent per 100 grams*
- *Organic matter = >5%*
- *Ca, Mg, Na, = Sodium Absorption Ratio (SAR) <12*
- *K = > 200 ppm*
- *Percent base saturation greater than 50%*
- *Kjeldahl nitrogen (total nitrogen) = 2% (20,000 ppm)*
- *Nitrate-nitrogen = 50 to 100 ppm*
- *Total P and available P = highly variable based on extraction method (maybe >20 ppm)*

See Table 1 for the required analytical methods for determining the soil properties above.

The soil shall be from a clean source and shall be analyzed to confirm the clean nature of the materials. Soil shall not contain metals above the higher of Tidal Area ambient levels for metals or the State of California Regional Water Quality Control Board Sediment Screening Criteria (RWQCB 2000) listed in Table 2 using EPA SW 846.

Organic contamination shall be assessed using EPA Test Method 8260B for volatile organic constituents, EPA Test Method 8270C for semi volatile organic constituents, and EPA Test Method 8081A and 8082 for pesticide and polychlorinated biphenyl constituents. Organic contaminants shall not exceed the higher of the specified EPA analytical test method detection limits or State of California Regional Water Quality Control Board Sediment Screening Criteria (RWQCB 2000). The Sediment Screening Criteria for various organic contaminants are provided in Table 3.

4. **Comment:** **Dewatering: The previous design included a temporary dam to allow for dewatering the landfill site, however, there were many problems with the dam. We request a description of how the site dewatering will be done during the upcoming construction.**

Response: Dewatering at the site may or may not be needed depending on the construction contractor's proposed construction technique. Problems with the Aqua Dam were primarily due to slow leakage from the structure and a lack of ongoing maintenance once MEC were discovered. Because the Navy could not allow the contractors back on the site until the explosion risk had been fully assessed, the Aqua Dam could not be properly maintained. Without maintenance, it deflated and could not perform appropriately.

The Navy will carefully review the construction contractor's proposed construction techniques, suppliers, and will scrutinize the maintenance needs of the system prior to approval.

RESPONSES TO COMMENTS FROM DFG-OSPR

General Comments

1. **Comment:** **Permanent and temporary wildlife impacts resulting from the 2.5 acre expansion of the landfill footprint should be described in the draft final TM, which should describe corresponding changes in project scope as mandated by all ARARs, including those from the DFG. Biological surveys, possible capture and relocation of State and federally listed species, federal consultations, and development of mitigation and monitoring plans may be required project elements in addition to the construction work to expand the landfill footprint.**

   Response: The Navy plans to work with EPA and other state and federal agencies on mitigation plans for the loss of 2.5 acres of wetland habitat resulting from construction of the landfill cover. To address the project mitigation needs, the EPA and other agencies have expressed an interest in repair or replacement of the Otter Slough tide gate and repair of the levee and tide gates at Baker Road.

   Relative to the existing landfill, the proposed landfill cap will offer enhanced habitat for two reasons. First, the cover will be composed of clean fill that will be isolated from any potentially contaminated landfill waste materials. Second, the cover will slope into the low-lying area of surface water at a slope that is approximately three times flatter and three times wider than at present. The flatter slope, increased width, and revegetation of the cover will create a new zone of high-quality intertidal habitat where none existed before.

2. **Comment:** **Biological surveys of the 2.5 acres of landfill footprint will likely be needed, as well as at Site 2 or elsewhere where permanent or temporary project impacts will occur. Surveys to detect presence of California Clapper Rails, California Black Rails, and the SMHM were conducted in 2006 on the Site 1 landfill by consultants Michael Morrison and Shawn Smallwood (Morrison and Smallwood, 2006)[2]. In that survey, all traps to catch SMHM were set on the existing landfill. Survey results for the SMHM are thus inapplicable to the expansion area at Site 1 and nearby areas at Site 2, which may be inhabited by that species. Survey results for the Clapper and Black Rails may also be inconclusive and additional surveys are likely needed relative to the proposed project. Protocols to determine**

[2] Morrison, M.L., and K. S. Smallwood. 2006. "A Monitoring Effort to Detect the Presence of the Federally Listed Species California Clapper Rail and Salt Marsh Harvest Mouse, and Wetland Habitat Assessment at the Naval Weapons Station Seal Beach Detachment Concord, California." U.S. Navy, Integrated Product Team, West Naval Facilities Engineering Command, Daly City, California. February 27.

presence of the SMHM, California Black Rail, or California Clapper Rail should be submitted to the DFG-OSPR at the above letterhead address. Depending on the outcome of biological surveys, measures to avoid take of Fully Protected or Threatened or Endangered species, as well as appropriate monitoring may be necessary. These measures and monitoring plan(s) should be submitted to DFG-OSPR in writing for review. If take of special status species is deemed unavoidable by the Navy, further coordination with DFG-OSPR will be necessary.

Response: As suggested in DFG-OSPR general comment 3, a field trip was conducted on May 3, 2007, to observe the site with DFG-OSPR and other regulatory agency representatives. The Navy appreciates the DFG-OSPR suggestion to meet in the field and feels that the site visit clarifies the information presented below.

The former surface of the landfill lacks potential habitat for the salt marsh harvest mouse (SMHM), as indicated in the Morrison and Smallwood report. In addition, the expansion area for the landfill consists of low-lying surface water areas. Because the SMHM is a terrestrial animal, it cannot live in inundated areas.

Clapper rails and black rails reside only in areas that offer suitable cover because they are known to be shy birds. Because of the lack of vegetative cover, no habitat is present for clapper and black rails at the landfill or in the immediately surrounding area. During surveys by Morrison and Smallwood, there was no evidence of clapper and black rails at the landfill. Based on the evidence of previous studies and the clear absence of suitable habitat at the site for the SMHM and clapper and black rails, the Navy disagrees that additional surveys are necessary.

3. **Comment:** **The DFG-OSPR believes that a field trip involving agency personnel to the new footprint of the landfill would be appropriate.**

Response: As indicated above, the Navy appreciates this suggestion, and a field trip was conducted as requested on May 3, 2007.

4. **Comment:** **Mitigation will likely be needed for the permanent loss of the 2.5 acres of habitat and possibly other temporary or permanent impacts resulting from the project. Consultation with the U.S. Fish and Wildlife Service may be appropriate for potential adverse impacts to the SMHM, California Clapper Rail, and possibly other federally-listed species. The Fish and Game Commission's no net loss policy for wetlands was identified as a "To be considered" item in the September 15, 2004, DFG ARARs. It will be necessary to map and characterize the wetland habitat that will be lost, prior to the development of a mitigation plan. The DFG uses the U.S. Fish and**

Wildlife Service definition of wetlands and believes that wetlands should be mapped using this definition. Any mitigation proposal should have elements that include the following:

a. Description of areas impacted, including a description and acreage of each habitat type.

b. A description of the proposed mitigation area, including location, and current habitat quality and quantity. Mitigation site options may include participation in an approved federal mitigation bank or development of a large mitigation area which is contiguous with existing wetland habitat.

c. Functions and values of habitat to be created.

d. A separate planting plan, including species to be planted, irrigation schedule, sources of seed plant materials, planting details such as use of seeds vs. potted plants, site grading, and other elements.

e. A separate monitoring element, including an annual timetable, duration and frequency of monitoring, success criteria, reporting requirements, and other elements.

Response: The Navy has identified EPA's § 404 guidelines as ARARs, including those regarding wetlands mitigation. Under the guidelines, all appropriate and practicable steps must first be taken to avoid and minimize impacts to wetlands when there is a proposed discharge of dredged or fill material into wetlands. Compensatory mitigation is required to replace the loss of wetlands for unavoidable impacts.

As part of the redesign, some wetland habitat of poor quality will be filled. That wetland area is of poor quality because it is a disturbed and is made up of landfill waste and soil cover materials. To the extent that hazardous materials are present in the landfill waste, they may be exposed at the current landfill perimeter. As such, hazardous materials could migrate from erosion or from leaching directly to surface water.

The proposed landfill cover will be composed of clean fill materials, and the soil will be placed on a much flatter slope than currently exists at the landfill. The proposed slope will create approximately three times as much wetland as now exists at the current landfill perimeter and the created wetland will be of high quality. Approximately 2.5 acres of wetland habitat will be filled.

The Navy plans to work with EPA on the mitigation plans for the loss of wetland habitat. The Navy also plans to consult with the U.S. Fish and Wildlife Service (FWS) on the revised landfill design. Staff from the FWS attended the recent site tour conducted by the Navy on May 3, 2007.

The Navy provided the FWS with the March 5, 2007, technical memorandum and provided a copy of the ESD document to the FWS.

It is the Navy's view that the Fish and Game Commission Wetlands Policy (1988) amended in 2005 is not a TBC. TBCs are generally used when ARARs are not fully protective or when no ARAR directly addresses the contamination or response action. In this case, the § 404 guidelines are fully protective and directly address the conditions at the site.

DFG's September 15, 2004, letter to the Navy regarding ARARs for Tidal Area IR Sites 1, 2, 3, 4, 5, 6, 9, 11, 26, 28, 30, and 31 was submitted after the IR Site 1 ROD was finalized and signed by EPA and DTSC. The ESD document evaluates only the ARARs that were previously identified in the ROD or that are affected by revisions to the landfill cover design.

5. **Comment:** **The U.S. Fish and Wildlife Service should be contacted as soon as possible regarding requirements for federally-listed species that may be present at or near the project site. This will help ensure that all plans for dual-listed species are consistent with State and federal requirements and that the project will proceed in a timely manner.**

Response: The Navy has already completed adequate surveys to determine that listed species are not present at or near the project site (Morrison and Smallwood 2006[3]). The Navy intends to consult with FWS and EPA regarding the mitigation plans for the loss of 2.5 acres of wetland habitat.

Specific Comments

1. **Comment:** **<u>Page 1, Section 1.0</u>. Additional project elements such as surveys and habitat mitigation should be included here.**

Response: Please see responses to DFG-OSPR general comments 1, 2, and 4.

2. **Comment:** **<u>Page 12, Section 4.1</u>. Several regulations are mentioned in this section. The ARARs from the DFG that have been provided should also be mentioned.**

Response: Please see response to EPA major comment 2 and DFG-OSPR general comment 4.

[3] Morrison, M.L., and K.S. Smallwood. 2006. "A Monitoring Effort to Detect the Presence of the Federally Listed Species California Clapper Rail and Salt Marsh Harvest Mouse, and Wetland Habitat Assessment at the Naval Weapons Station Seal Beach Detachment Concord, California." U.S. Navy, Integrated Product Team, West Naval Facilities Engineering Command, Daly City, California. February 27.

3. **Comment:** **<u>Page 15, Section 4.4</u>. Project cost estimates should be revised to reflect additional project requirements noted above.**

Response: The revised estimated cost is presented in Section 4.6, Project Cost.

4. **Comment:** **<u>Appendix D</u>. The title of this appendix and its content should be revised to encompass other than just wetlands. Several federal regulations are included, including U.S. Army Corps of Engineers and U.S. Environmental Protection Agency guidelines. Federal requirements pertaining to threatened and endangered species are mentioned here on page D-4 but a mechanism for compliance with those requirements should be included elsewhere in the TM, such as a formal consultation with the U.S. Fish and Wildlife Service. The DFG ARARs should be added to the list in the Appendix.**

Response: All ARARS for IR Site 1 are discussed in the ROD (Navy 2004[4]). Changes to the ARARS analysis caused by the redesign are now discussed in Appendix F of the ESD document. All significant changes to the analysis involve wetlands habitat. The Navy has revised the title of this section to "Supplemental ARARs Evaluation."

[4] Navy. 2004. "Final Record of Decision, Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord, Concord, California." July.

RESPONSES TO REGULATORY AGENCY COMMENTS ON THE DRAFT TECHNICAL MEMORANDUM LANDFILL COVER REDESIGN IR SITE 1, TIDAL AREA LANDFILL, NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, CONCORD, CALIFORNIA

This document presents the U.S. Department of the Navy's (Navy) responses to comments from staff from the California Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) on the "Draft Technical Memorandum Landfill Cover Redesign, Installation Restoration [IR] Site 1, Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord, Concord, California," dated May 16, 2007. The comments addressed below were received from the DFG-OSPR on June 1, 2007.

RESPONSES TO COMMENTS FROM DFG-OSPR

General Comments

1. **Comment:** **We thank Angie Lind and the Navy for organizing the May 3, 2007, field trip to the Site 1 Landfill. The trip was an excellent opportunity for agency staff to better understand the proposed landfill cap redesign, and to help identify any remaining project construction and regulatory issues.**

   Response: Thank you. Comment noted.

2. **Comment:** **Information provided by the U.S. Environmental Protection Agency (U.S. EPA), and confirmed by the Navy, indicates that the project modification requires an explanation of significant difference (ESD). Therefore, additional DFG ARARs are applicable. Specifically, we believe that the wetlands "to be considered" (TBC) policy that was provided with our 2004 ARARs submittal should be adopted by the Navy, including all provisions to avoid "no net loss" of wetlands acreage or habitat value.**

   Response: The Navy has prepared the ESD document as requested and plans to work with EPA on mitigation for the loss of 2.5 acres of wetland habitat.

3. **Comment:** **The Navy has provided various supplementary materials since the release of the draft TM. These include a cross section diagram of existing and proposed fill surfaces, a handout describing proposed landfill conditions and 1.9 acres of "aquatic habitat" loss, and recently e-mailed information identifying plant species for the new fill slope. These materials are very useful and should be included in the draft final TM.**

Response: The wetlands delineation report has been provided to DFG-OSPR under separate cover.

4. **Comment:** **We have reviewed the small mammal and rail survey reports from biological consultants Shawn Smallwood and Mike Morrison, based upon field surveys in 2005 and 2006. Habitat values for the SMHM, the California Clapper Rail, and the California Black Rail are likely minimal on the existing landfill and in the additional 2.5 acre proposed landfill footprint. This is based upon the 2005 and 2006 survey results and other evidence.**

Response: Comment noted.

5. **Comment:** **We look forward to the opportunity to review a mitigation plan for wetland fill for 1.9 acres. We concur with the Navy that the placement of the proposed landfill cover provides some offsetting habitat values, and thus mitigates for 0.6 acres of wetlands fill. Sites for mitigation should be located as close as possible to the proposed fill area and might include Site 2. The implementation of a mitigation plan appears to be compatible with the Navy's recommendations for future land use of the site (Tetra Tech, 2003[1]), in which the Navy indicates that it favors the no-action alternative regarding contaminants. Plan elements might include the following options or combination of options, as consistent with any future CERCIA activities:**

   a. **Repair of the tidal gate at Otter Slough.**

   b. **Modification of parts of Site 2, including improvement of habitat for SMHM and rails.**

   c. **Other off-site mitigation, preferably at Concord NWS.**

Response: The Navy has committed to repair of the tide gate and levees as mitigation for the loss of 2.5 acres of wetland habitat pending necessary studies and approvals. The Navy plans to work with EPA and other state and federal agencies on the mitigation plan.

[1] Tetra Tech EM Inc. 2003. "Revised Draft Final Remedial Investigation Report, Tidal Area Sites 2, 9, and 11, Naval Weapons Station Seal Beach Detachment Concord, Concord, California."

Specific Comments

Responses to EPA Comments

1. **Comment:** **The Navy's response to US EPA comments #2, Pages 4 and 5. The long-term integrity of the newly placed fill, as well as of the landfill itself, is important to help reduce ecological risk. The U.S. EPA expressed a concern that the long-term integrity of the proposed landfill cover surface, and the landfill itself, could be reduced by wave action and wind fetch. Past sea level rise has been documented by the Bay Conservation and Development Commission http://www.bcdc.ca.gov/index.php?cat=56. We concur with the U.S. EPA that rising sea levels may be rising, especially with respect to possible effects of global warming. Another uncertainty regarding the long-term integrity of the landfill and cover surface is the effectiveness of the proposed wetland plantings in preventing surface erosion of the proposed 18 inch soil cover. A contingency plan to replace parts of the soil cover and/or install additional erosion control measures may be necessary.**

   Response: The cover is designed to accommodate sea level rise and abnormally high tides. Thirty years of monitoring and maintenance are also required as specified in the ROD (Navy 2004[2]). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-required maintenance and reviews provide the necessary contingency plan for any unforeseen conditions.

Responses to DFG-OSPR Comments

2. **Comment:** **Pages 12, 13 - RTC #4. The Navy has not provided sufficient justification to support the conclusion that no wetland mitigation is required. Design specifications specify that the landfill footprint will permanently expand into 2.5 acres of wetlands, including about 1.9 acres of what the Navy has described in a recent supplement as aquatic habitat. The entire 2.5 acre expanded footprint are wetlands per the U.S. Fish and Wildlife Service wetland definition (Cowardin et al, 1979[3]), which includes lands that are periodically or permanently covered by shallow water. The "no net loss" requirement of this TBC is relevant irrespective of whether the 2.5 acres is habitat for the SMHM or California Clapper Rail. Also, the Navy acknowledges on page 13 that an ESD will evaluate ARARs "that are affected by**

[2] Navy. 2004. "Final Record of Decision, Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord, Concord, California." July.

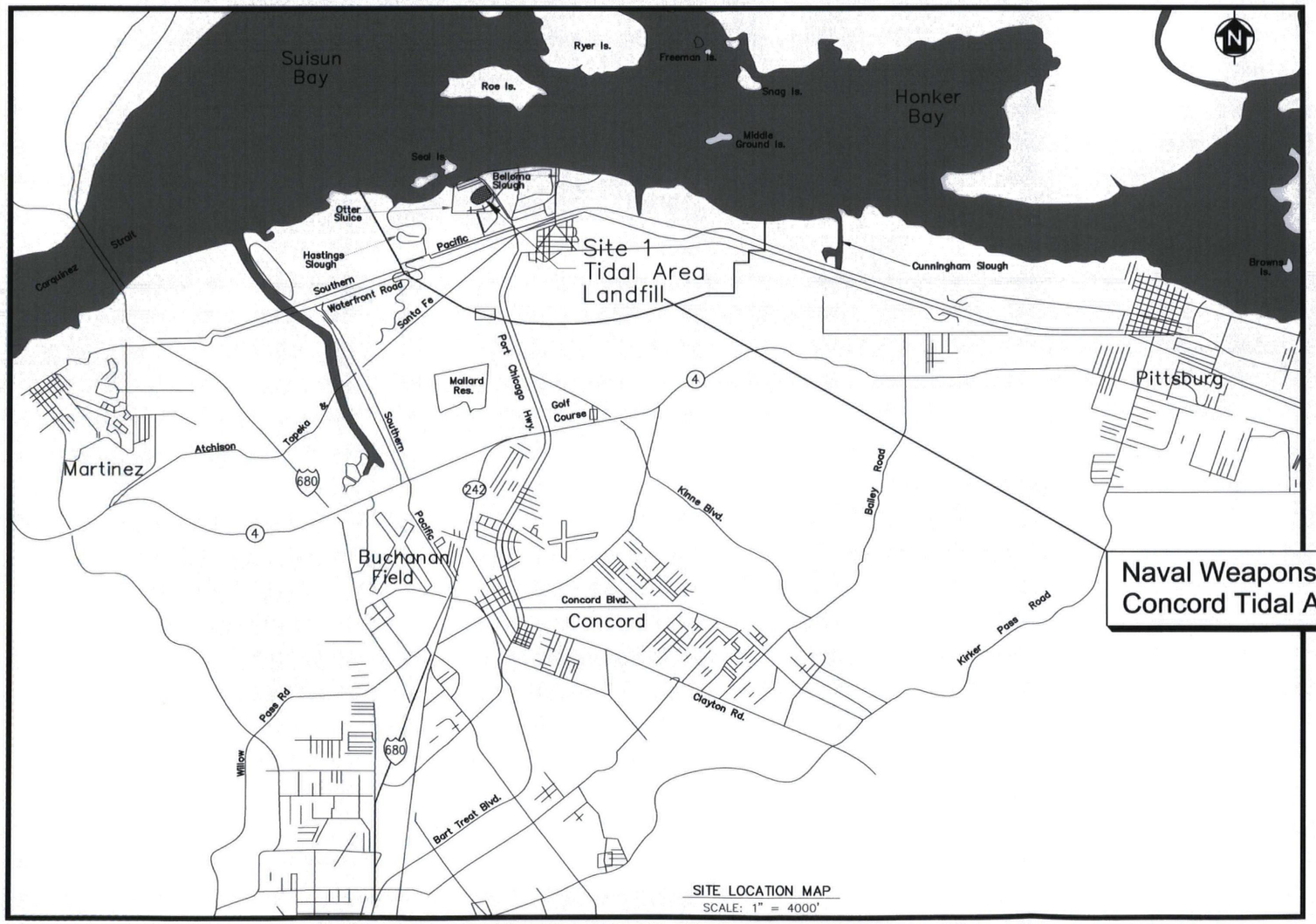
[3] Cowardin, L.M., and others. 1979. "Classification of Wetlands and Deepwater Habitats of the United States." U.S. Fish and Wildlife Service.

revisions to the landfill cover design." DFG-OSPR requests that a wetland mitigation and monitoring plan be prepared and submitted for review prior to project implementation.

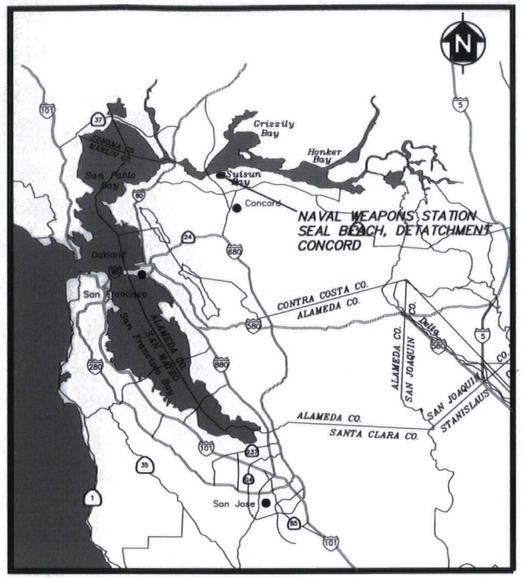
Response: The Navy is working with EPA on mitigation for the planned loss of 2.5 acres of wetland habitat. EPA has expressed interest in having IR Site 2 dewatered to create a habitat for the SMHM. The dewatering is proposed to be accomplished by repairing or replacing the tide gate at the north end of Otter Slough, repairing tide gates below Baker Road, and raising the Baker Road levee. The proposed project is likely to affect a large area of wetlands to the west of Otter Slough and to the south of the Tidal Area sites. The necessary design parameters for the project and extent of changes that will result cannot be determined without significant study. Studies will be necessary to evaluate ecological effects, assess geotechnical design parameters and bathymetry of Otter Slough, estimate the project cost, and evaluate existing hydrologic conditions and estimate the extent of future hydrologic effects. The proposed dewatering project for site is sufficiently complex that the design parameters cannot be determined and approved prior to the year 2008 construction season. Although the landfill has been without a cover for decades without documented environmental damage, conditions could change. The Navy is currently funded to construct the landfill cap, and there is no legal or practical reason to delay the landfill cap construction project while mitigation is studied for the planned loss of 2.5 acres of wetland habitat. Studies to evaluate the site conditions and hydrology of the area have been funded, authorized, and are now underway.

APPENDIX B
REVISED LANDFILL CAP PLANS

NAVAL WEAPONS STATION
SEAL BEACH, DETACHMENT CONCORD
CONCORD, CALIFORNIA
IR SITE 1 - TIDAL AREA LANDFILL COVER
FINAL REMEDIAL DESIGN DRAWINGS

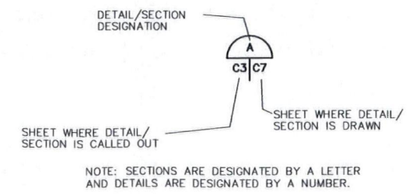


SITE LOCATION MAP
SCALE: 1" = 4000'



VICINITY MAP
SCALE: 1" = 10 MILES

SHEET INDEX



NOTE: SECTIONS ARE DESIGNATED BY A LETTER AND DETAILS ARE DESIGNATED BY A NUMBER.

4000' 0 4000' 8000'
SCALE: 1" = 4000'

10 MI 0 10 MI 20 MI
SCALE: 1" = 10 MILES

REVISIONS

SYMBOL	DESCRIPTION	PREP'D BY	DATE	APPROVED

Tetra Tech EM Inc.

DSGN. SDD	CHK. JVB	DRN. DMF	DATE
SUBMITTED BY			DATE
APPROVED		F.P.	
D.M.			
BR.HD.		DIR.	

SATISFACTORY TO
EFD. FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND
INTEGRATED PRODUCT TEAM WEST
DALY CITY, CALIFORNIA

NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT CONCORD, CONCORD, CALIFORNIA

SITE 1 TIDAL AREA LANDFILL COVER
FINAL REMEDIAL DESIGN
VICINITY MAP, SITE LOCATION MAP, AND SHEET INDEX

SIZE D
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE IDENT. NO.
00000

PROJECT LOCATION
CONCORD, CALIFORNIA

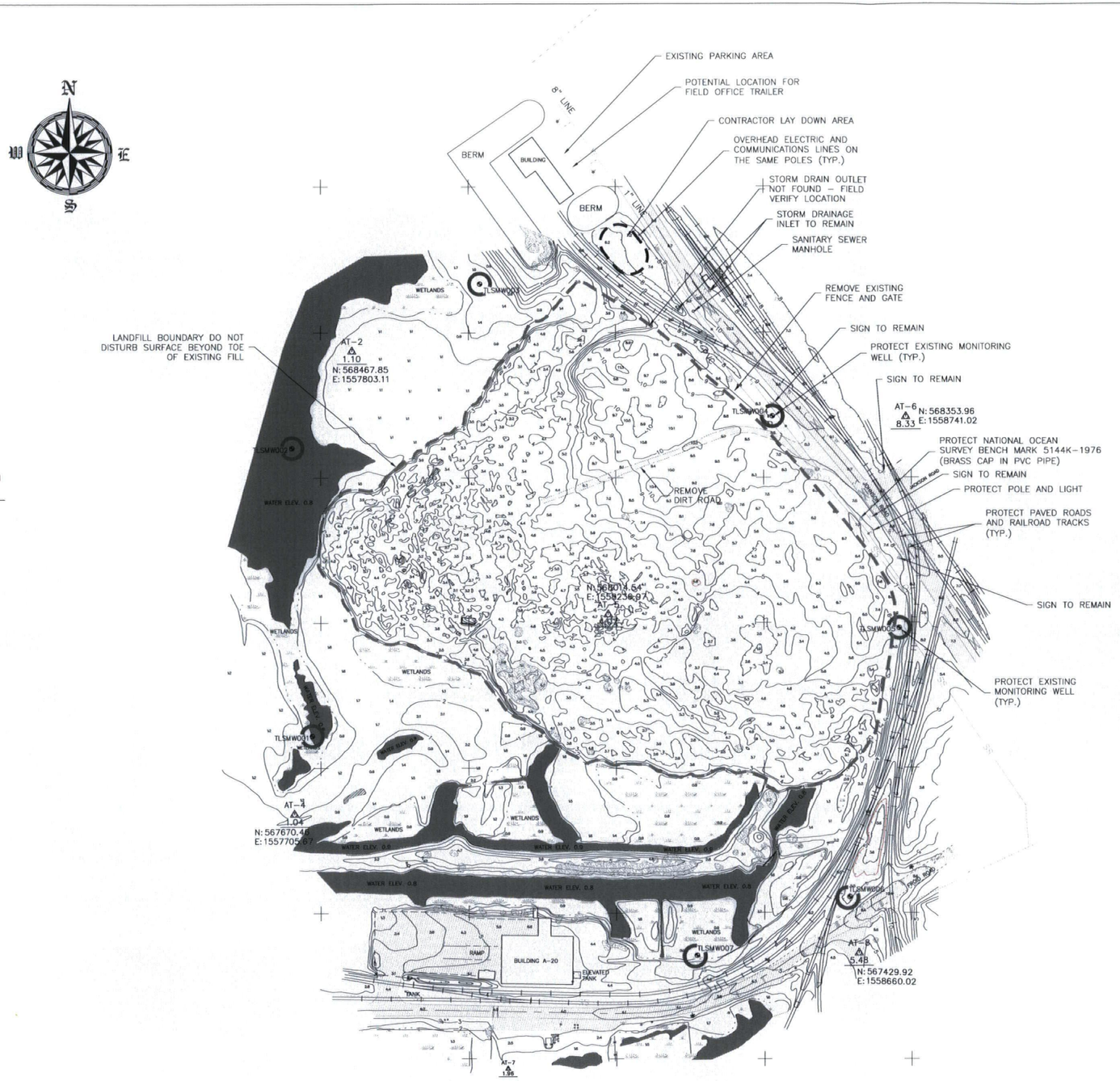
CONSTR. CONTR. NO.
000-00-X-000

SPECIFICATION
00-00-0000

NAVFAC DWG. NO.
DS.000.0000

DWG. NO.
G-1

SHEET 1 OF 7



SURVEY CONTROL POINTS			
POINT	NORTHING	EASTING	ELEVATION
AT–2	568467.85	1557803.11	1.10
AT–4	567670.46	1557705.67	1.04
AT–5	568014.54	1558236.97	4.07
AT–6	568353.96	1558741.02	8.33
AT–8	567429.92	1558660.02	5.48

LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- DEPRESSION CONTOUR
- SPOT ELEVATION
- CONCRETE
- ASPHALT
- CL–STRIPE
- ROAD PAINT LINE
- DIRT ROAD
- CURB
- RAIL ROAD POINT OF FROG
- BUILDING, RAMP, DECK
- STORM DRAIN
- SANITARY SEWER LINE
- OVER HEAD POWER LINE
- WATER LINE
- FENCE
- RETAINING WALL
- HEADWALL
- LIGHT
- SIGN
- POST
- POWER/TRANSFORMER POLE
- BOLLARD
- DROP INLET
- CULVERT
- FIRE HYDRANT
- MISC UTILITY
- WATER / MARSH
- BRUSH
- SURFACE DEBRIS
- AT–* 1.25 SURVEY CONTROL POINTS
- EXISTING MONITORING WELLS TO REMAIN (7 PLACES)

NOTES:

1. EXCAVATION OF LANDFILL WASTE IS STRICTLY PROHIBITED DUE TO THE POSSIBILITY OF MUNITIONS AND EXPLOSIVES OF CONCERN.
2. PROTECT ALL EXISTING MONITORING WELLS.
3. ON–SITE DEBRIS AT THE SURFACE SHALL BE SHREDDED OR CRUSHED AND CONSOLIDATED INTO WASTE FILL. WASTE THAT CANNOT BE CONSOLIDATED SHALL BE DISPOSED OF OFF SITE.
4. THE SITE WILL BE ACCESSED VIA JOHNSON ROAD

BASIS OF COORDINATES AND ELEVATION:

NAD27 HORIZONTAL FEET COORDINATES (EPOCH DATE: 1992), CCS ZONE 3, SURVEYED BY GPS–RTK OBSERVATIONS ESTABLISHED FROM NGS CONTROL STATION 941 5144 J TIDAL TO STATION HARLEY.

NGVD29 VERTICAL FEET ELEVATIONS SURVEYED BY GPS–RTK OBSERVATIONS ESTABLISHED FROM TIES TO NGS BENCHMARK 26 USN (ELEV=17.38').

TOPOGRAPHIC MAPPING COMPILED BY HUNTER SURVEYING, INC., ORANGEVALE, CA. PHOTOGRAMMETRIC METHODS AT A MAP SCALE OF 1"=50' FROM 1:2400 (1"=200') PHOTOGRAPHY.

DATE OF PHOTOGRAPHY: 09–10–2001

CONTOUR INTERVAL: 1 FOOT

MOST WETLANDS AREAS ARE COVERED BY SALT–GRASS VEGETATION.

100 0 100 200
SCALE

REVISIONS				
SYMBOL	DESCRIPTION	PREP. BY	DATE	APPROVED

Tetra Tech EM Inc.

DSGN. SDD	CHK. XXX	DRN. DMF	DATE
SUBMITTED BY			
D.M.	F.P.		
BR.HD.	DIR.		

SATISFACTORY TO DATE
APPROVED DATE
EFD. FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY WEST
DALY CITY, CALIFORNIA

NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT CONCORD, CONCORD, CALIFORNIA

SITE 1 TIDAL AREA LANDFILL COVER
PRECONSTRUCTION SURFACE TOPOGRAPHY AND SITE CONDITIONS (SEPTEMBER 2001)

SIZE D
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE IDENT. NO.
00000

PROJECT LOCATION
CONCORD, CALIFORNIA

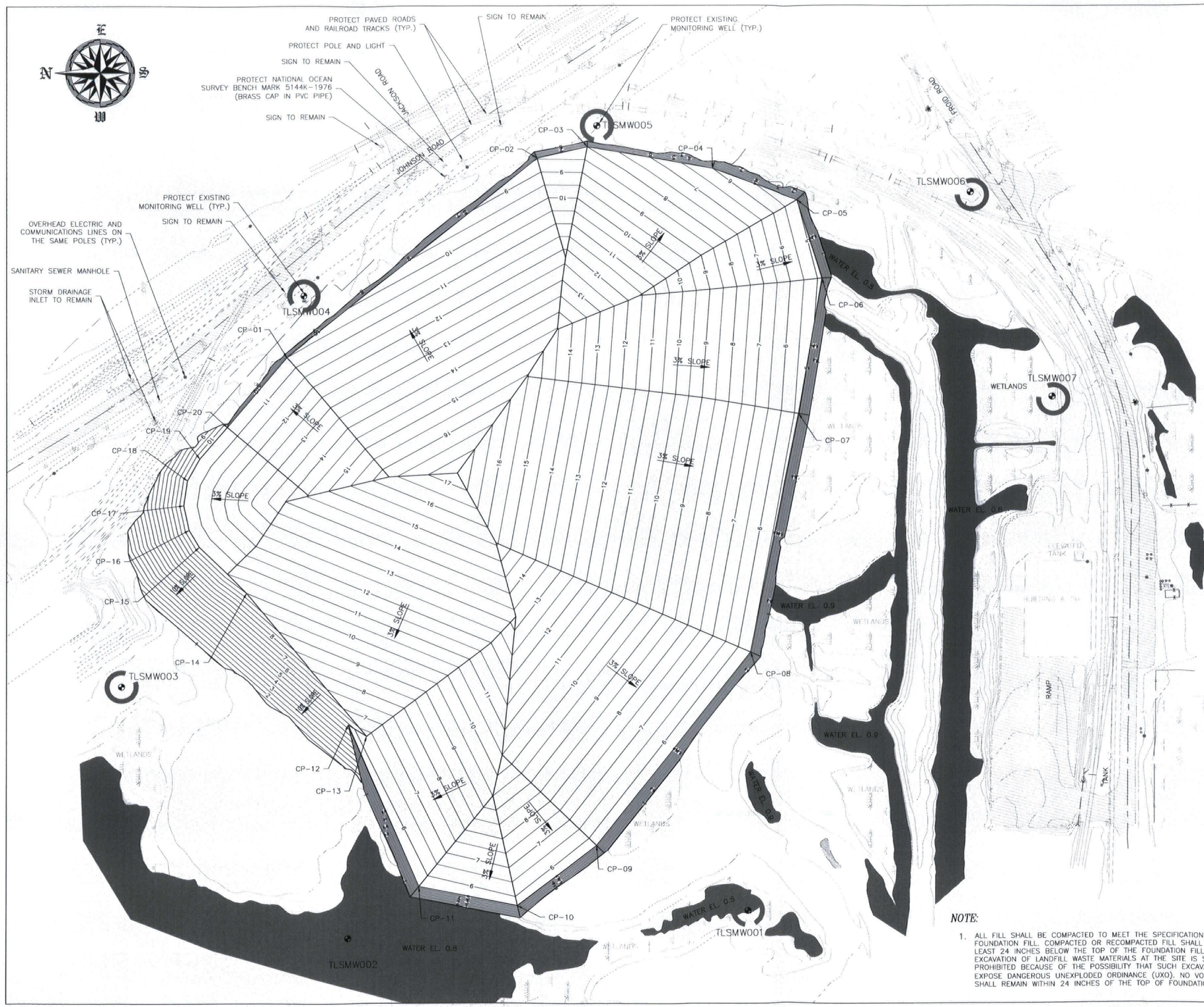
CONSTR. CONTR. NO.
000–00–X–000

SPECIFICATION
00–00–0000

NAVFAC DWG. NO.
DS.000.0000

DWG. NO.
C–1

SHEET 2 OF 7



LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- CONCRETE
- ASPHALT
- CL-STRIPE
- ROAD PAINT LINE
- RAIL ROAD
- POINT OF FROG
- STORM DRAIN
- SANITARY SEWER LINE
- OVER HEAD POWER LINE
- WATER LINE
- FENCE
- RETAINING WALL
- HEADWALL
- LIGHT
- SIGN
- POST
- POWER/TRANSFORMER POLE
- BOLLARD
- DROP INLET
- CULVERT
- FIRE HYDRANT
- MISC UTILITY
- WATER / MARSH
- EXISTING MONITORING WELLS TO REMAIN (7 PLACES)

3% CAP GRADE BREAK CONTROL POINTS

LOCATION	X-COORDINATE	Y-COORDINATE	Z-COORDINATE
CP-01	1558437.09	568377.44	10.50
CP-02	1558688.77	568064.82	8.46
CP-03	1558702.82	568002.47	8.00
CP-04	1558675.12	567847.54	6.00
CP-05	1558635.64	567742.28	5.01
CP-06	1558536.15	567711.48	4.83
CP-07	1558364.84	567740.89	5.35
CP-08	1558062.14	567801.32	5.51
CP-09	1557817.50	567992.31	5.61
CP-10	1557742.31	568090.87	5.69
CP-11	1557766.56	568213.54	5.53
CP-12	1557970.79	568300.45	5.86
CP-13	1557956.32	568277.60	6.28
CP-14	1558138.13	568428.32	10.00
CP-15	1558196.56	568487.18	10.50
CP-16	1558218.16	568500.00	10.50
CP-17	1558249.27	568506.75	10.50
CP-18	1558280.75	568502.09	10.50
CP-19	1558308.57	568486.62	10.50
CP-20	1558308.57	568486.62	10.50

NOTE: CONTROL POINTS ARE LOCATED AT THE GRADE BREAK OF THE 3% CAP SLOPE AND THE 10% OR 3:1 SIDE SLOPES

NOTE:

1. ALL FILL SHALL BE COMPACTED TO MEET THE SPECIFICATIONS OF FOUNDATION FILL. COMPACTED OR RECOMPACTED FILL SHALL EXTEND AT LEAST 24 INCHES BELOW THE TOP OF THE FOUNDATION FILL LAYER. ALL EXCAVATION OF LANDFILL WASTE MATERIALS AT THE SITE IS STRICTLY PROHIBITED BECAUSE OF THE POSSIBILITY THAT SUCH EXCAVATION COULD EXPOSE DANGEROUS UNEXPLODED ORDINANCE (UXO). NO VOIDS OR DEBRIS SHALL REMAIN WITHIN 24 INCHES OF THE TOP OF FOUNDATION FILL LAYER.

60' 0 60' 120'

SCALE: 1" = 60'

REVISIONS

SYMBOL	DESCRIPTION	PREP. BY	DATE	APPROVED

Tetra Tech EM Inc.

DSGN. SDD	CHK. XXX	DRN. DMF	DATE
SUBMITTED BY		APPROVED	DATE
		SATISFACTORY TO	DATE
		EFD. FOR COMMANDER NAVFAC	
F.P.			
DIR.			
D.M.			
BR. HD.			

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY WEST
DALY CITY, CALIFORNIA

NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT CONCORD, CONCORD, CALIFORNIA

SITE 1 TIDAL AREA LANDFILL COVER
TOP OF FOUNDATION FILL LAYER

SIZE D
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE IDENT. NO.
00000

PROJECT LOCATION
CONCORD, CALIFORNIA

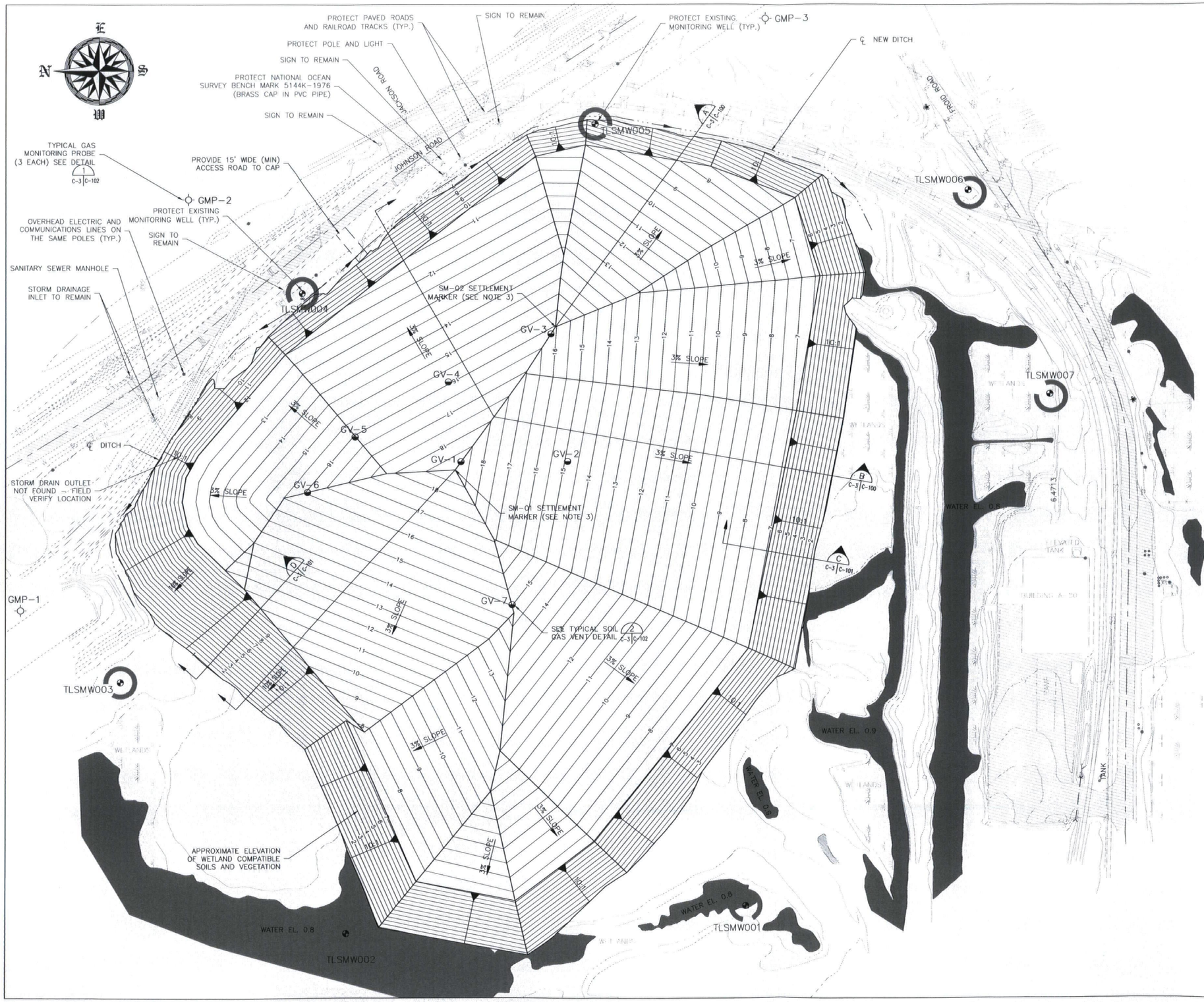
CONSTR. CONTR. NO.
000-00-X-000

SPECIFICATION
00-00-0000

NAVFAC DWG. NO.
DS.000.0000

DWG. NO.
C-2

SHEET 3 OF 7



LEGEND:

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- CONCRETE
- ASPHALT
- CL-STRIPE
- ROAD PAINT LINE
- RAIL ROAD / POINT OF FROG
- STORM DRAIN
- SANITARY SEWER LINE
- OVER HEAD POWER LINE
- W — WATER LINE
- FENCE
- RETAINING WALL
- HEADWALL
- LIGHT
- SIGN
- POST
- POWER/TRANSFORMER POLE
- BOLLARD
- DROP INLET
- CULVERT
- FIRE HYDRANT
- MISC UTILITY
- WATER / MARSH
- EXISTING MONITORING WELLS TO REMAIN (7 PLACES)
- NEW GAS VENT
- NEW GAS MONITORING PROBE

GAS MONITORING PROBE LOCATIONS		
LOCATION	X-COORDINATE	Y-COORDINATE
GMP-1	1558110.97	568804.65
GMP-2	1558634.01	568499.16
GMP-3	1558919.05	567779.35
GAS VENT LOCATIONS		
GV-1	1558300.55	568158.18
GV-2	1558300.79	568025.10
GV-3	1558463.37	568045.64
GV-4	1558402.20	568173.71
GV-5	1558332.12	568289.35
GV-6	1558261.65	568349.03
GV-7	1558118.43	568094.51
SETTLEMENT MARKER LOCATIONS		
SM-1	1558290.16	568165.31
SM-2	1558472.31	568039.96

NOTES:

1. PROVIDE MINIMUM 1-FOOT DRAINAGE SWALE WITH 3:1 SIDE SLOPES (MAX) ON N.E. SIDE OF LANDFILL BETWEEN NEW CAP AND R.R. TRACKS. DITCHES SLOPED AT GREATER THAN 1.5% SHALL BE LINED WITH 2 INCHES TO 3 INCHES RIP RAP TO PREVENT EROSION.
2. GRADE AREAS N.E. OF NEW CAP TO DRAIN TO NEW DITCH.
3. SETTLEMENT MARKER TO CONSIST OF BRASS SURVEY HUB SET IN 12-INCH DIAMETER x 13-INCH LONG CONCRETE CYLINDER. BOTTOM OF CONCRETE TO BE SET FLUSH WITH THE SURFACE OF THE OF THE VEGETATIVE TOPSOIL COVER.

60' 0 60' 120'

SCALE: 1" = 60'

SYMBOL	DESCRIPTION	PREP.BY	DATE	APPROVED

REVISIONS

Tetra Tech EM Inc.

DSGN. SDD | CHK. XXX | DRN. DMF | DATE | SATISFACTORY TO | DATE

SUBMITTED BY | APPROVED | DATE | EFD FOR COMMANDER NAVFAC

F.P. | D.M.

DIR. | BR.HD.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY WEST
DALY CITY, CALIFORNIA

NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT CONCORD, CONCORD, CALIFORNIA

SITE 1 TIDAL AREA LANDFILL COVER
TOP OF VEGETATIVE TOPSOIL COVER

SIZE D
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE IDENT. NO.
00000

PROJECT LOCATION
CONCORD, CALIFORNIA

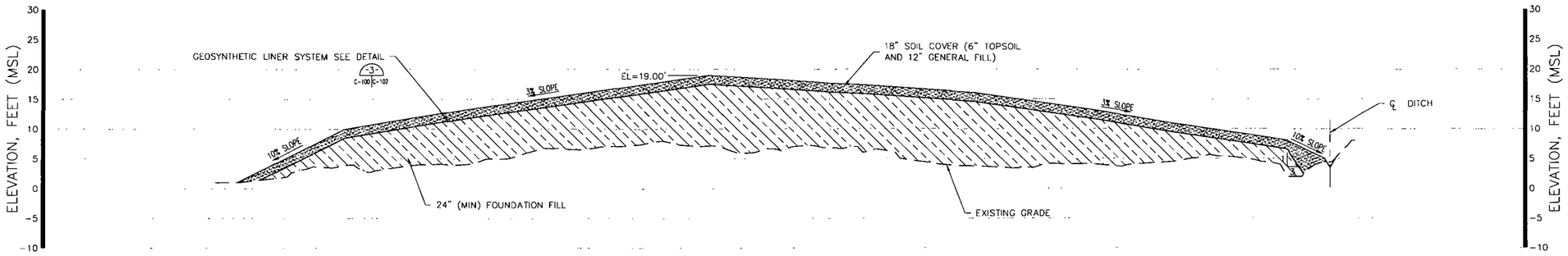
CONSTR. CONTR. NO.
000-00-X-000

SPECIFICATION
00-00-0000

NAVFAC DWG. NO.
DS.000.0000

DWG. NO.
C-3

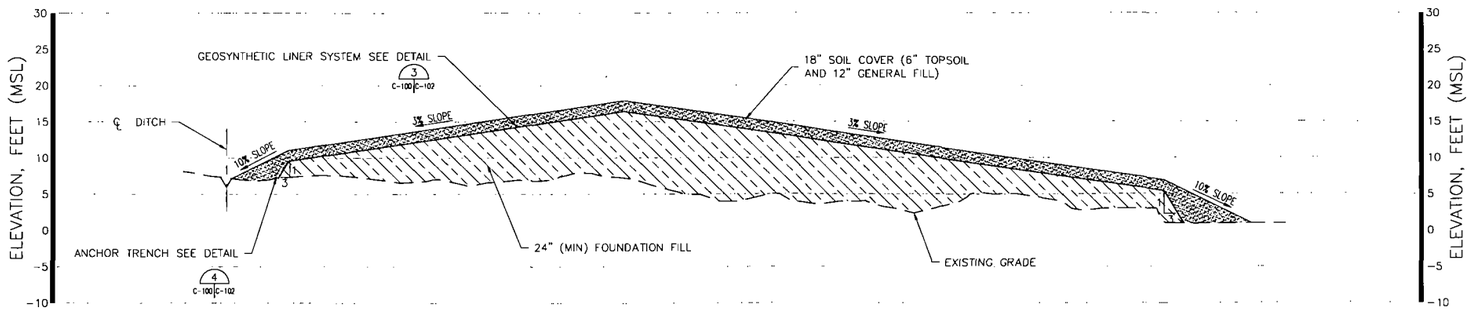
SHEET 4 OF 7



LANDFILL COVER CROSS SECTION A
C-3 C-100

50' 0 50' 100'
HORIZONAL SCALE: 1" = 50'

10' 0 10' 20'
VERTICAL SCALE: 1" = 10'



LANDFILL COVER CROSS SECTION B
C-3 C-100

50' 0 50' 100'
HORIZONAL SCALE: 1" = 50'

10' 0 10' 20'
VERTICAL SCALE: 1" = 10'

REVISIONS

SYMBOL	DESCRIPTION	PREP'BY	DATE	APPROVED

Tetra Tech EM Inc.

DSGN. SOD	CHK. XXX	DRN. DMF	DATE
SUBMITTED BY		APPROVED	DATE
D.M		F.P.	
BR.HD.		DIR.	

SATISFACTORY TO DATE

EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY WEST
DALY CITY, CALIFORNIA

NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT CONCORD, CONCORD, CALIFORNIA

SITE 1 TIDAL AREA LANDFILL COVER
FINAL CAP CROSS SECTIONS

SIZE D
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE IDENT. NO.
00000

PROJECT LOCATION
CONCORD, CALIFORNIA

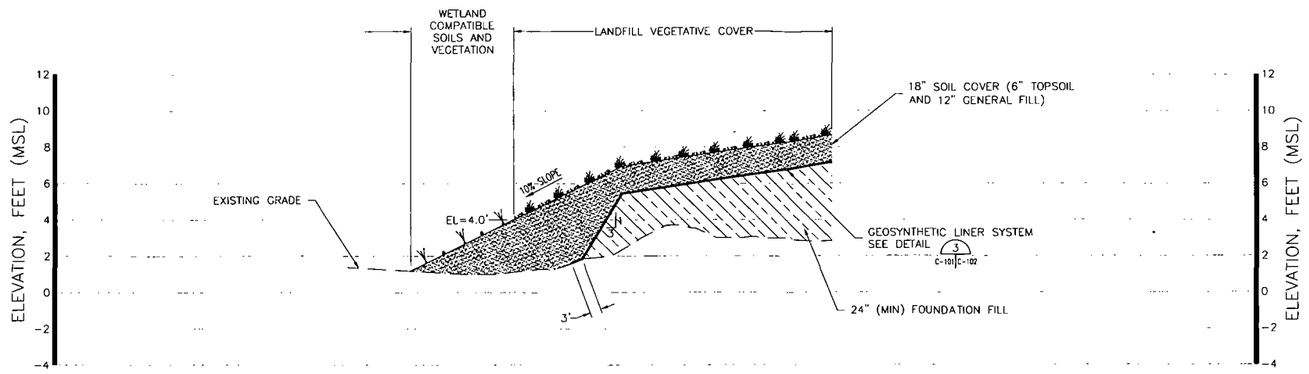
CONSTR. CONTR. NO.
000-00-X-000

SPECIFICATION
00-00-0000

NAVFAC DWG. NO.
DS 000.0000

DWG. NO.
C-100

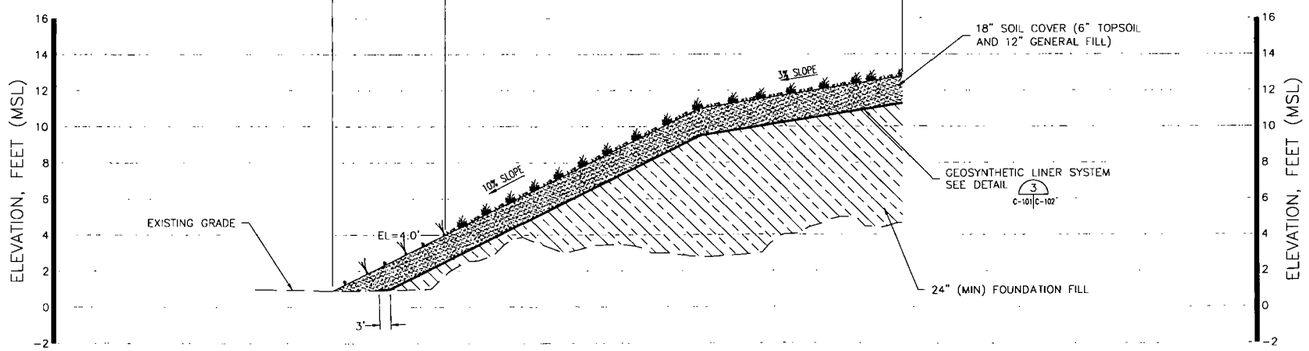
SHEET 5 OF 7



LANDFILL CROSS SECTION @ TOE — C / C-3 | C-101

20' 0 20' 40'
HORIZONAL SCALE: 1" = 20'

4' 0 4' 8'
VERTICAL SCALE: 1" = 4'



LANDFILL CROSS SECTION @ TOE — D / C-7 | C-101

20' 0 20' 40'
HORIZONAL SCALE: 1" = 20'

4' 0 4' 8'
VERTICAL SCALE: 1" = 4'

NOTES:

1. CONTRACTOR SHALL OBTAIN NAVY APPROVAL OF STORMWATER POLLUTION PREVENTION PLAN PRIOR TO BEGINNING CONSTUCTION. ALL STORMWATER BEST MANAGEMENT PRACTICES SHALL BE MAINTAINED UNTIL SUFFICIENT VEGETATION IS ESTABLISHED FOR EROSION PREVENTION.
2. BIOTIC BARRIER TO CONSIST OF GSE HYPERNET AS MANUFACTURED BY GSE LINING TECHNOLOGY, INC. OR EQUAL.
3. BIOTIC BARRIER TO EXTEND A MINIMUM OF 3' BEYOND SIDE SLOPE.

REVISIONS

SYMBOL	DESCRIPTION	PREP'D BY	DATE	APPROVED

Tetra Tech EM Inc.

DSGN. XXX	CHK. XXX	DRN. DMF	DATE
SUBMITTED BY		APPROVED	DATE
D.M.	F.P.	SATISFACTORY TO	DATE
BR.HD.	DIR.	EFD FOR COMMANDER NAVFAC	

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY WEST
DALY CITY, CALIFORNIA

NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT CONCORD, CONCORD, CALIFORNIA

SITE 1 TIDAL AREA LANDFILL COVER
CROSS SECTION DETAILS

SIZE D
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE IDENT. NO
00000

PROJECT LOCATION
CONCORD, CALIFORNIA

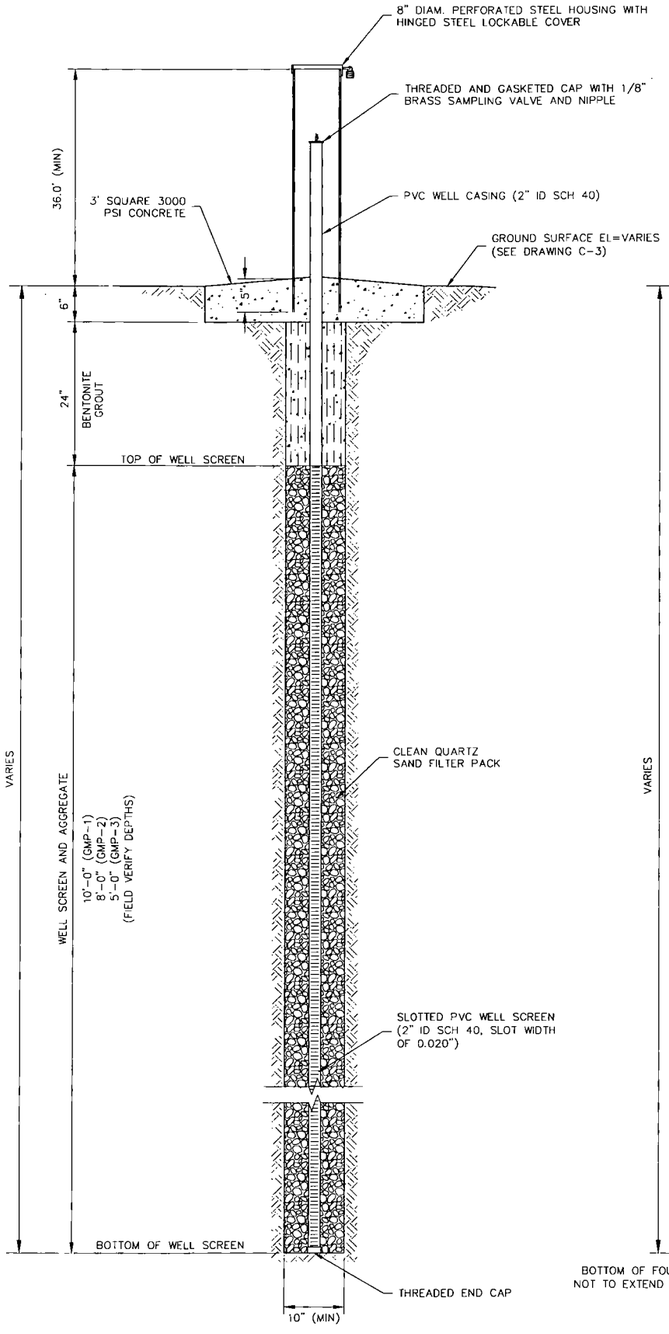
CONSTR CONTR. NO.
000-00-X-000

SPECIFICATION
00-00-0000

NAVFAC DWG. NO.
DS.000.0000

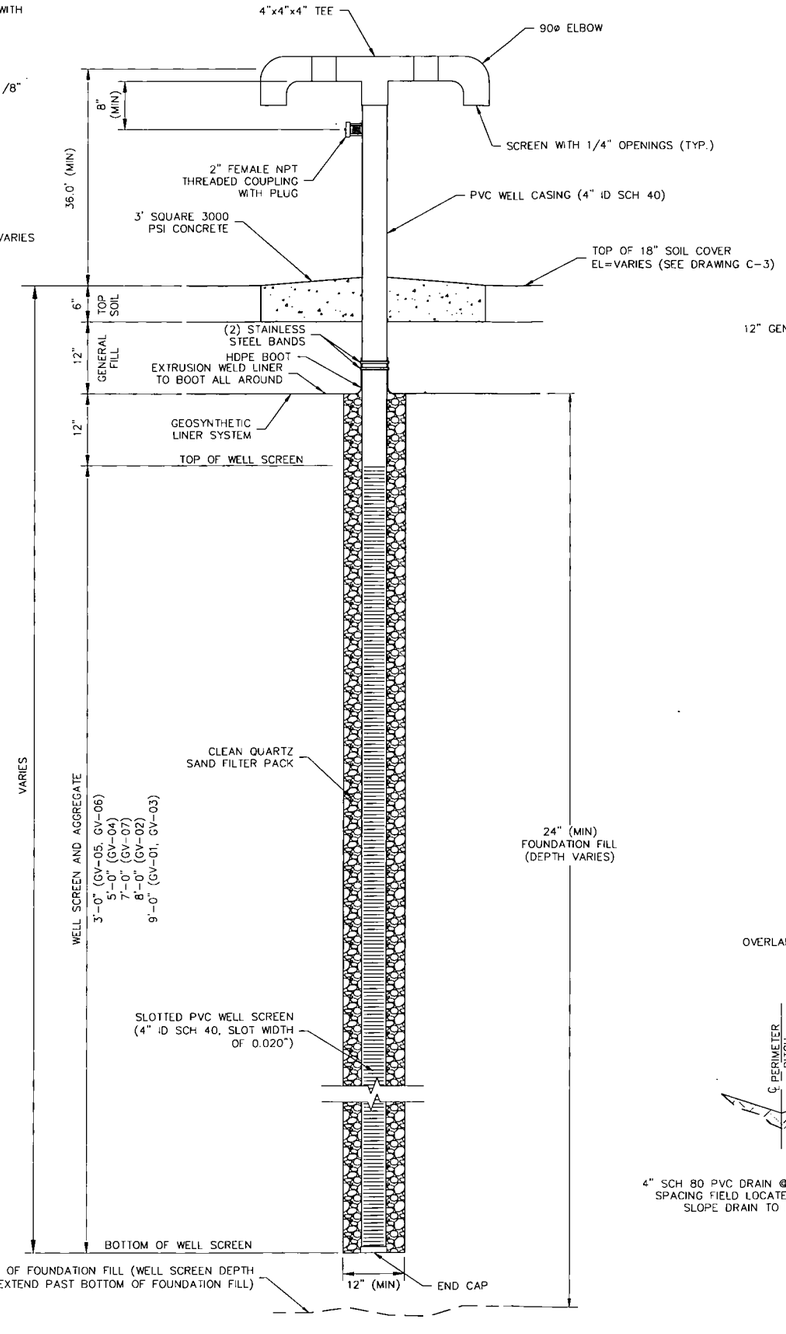
DWG. NO.
C-101

SHEET 6 OF 7



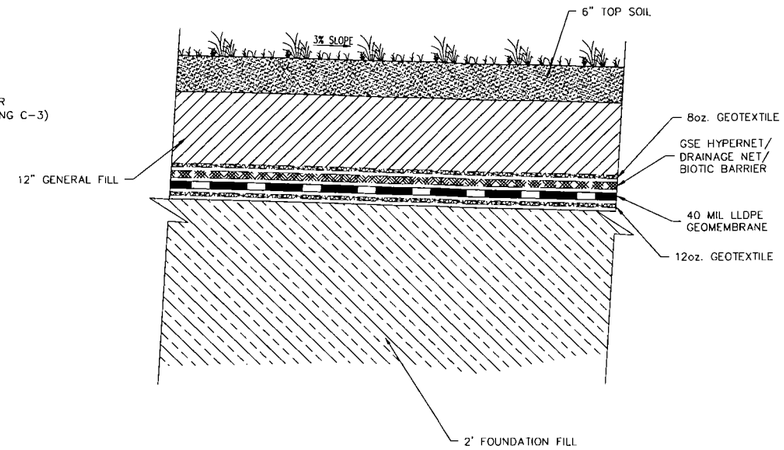
SOIL GAS MONITORING PROBE (TYP.) — 1 (C-3 | C-102)

SCALE: 1" = 1'-0"



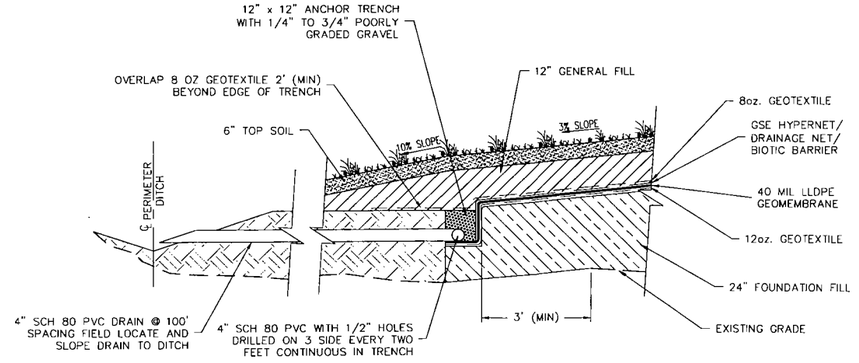
SOIL GAS VENT (TYP.) — 2 (C-3 | C-102)

SCALE: 1" = 1'-0"



GEOSYNTHETIC LINER SYSTEM (TYP.) — 3 (C-100 | C-102)

SCALE: 1" = 1'-0"



ANCHOR TRENCH (TYP.) — 4 (C-100 | C-102)

SCALE: 1" = 2'-0"

REVISIONS

SYMBOL	DESCRIPTION	PREP.BY	DATE	APPROVED

Tetra Tech EM Inc.

DSGN. DMT	CHK. JB	DRN. DMF	DATE
SUBMITTED BY		APPROVED	DATE
D.M.	F.P.		
BR.HD.	DIR.		

SATISFACTORY TO

EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND
INTEGRATED PRODUCT TEAM WEST
NAVAL WEAPONS STATION SEAL BEACH, DETACHMENT CONCORD, CONCORD, CALIFORNIA — DALY CITY, CALIFORNIA

SITE 1 TIDAL AREA LANDFILL COVER
FINAL REMEDIAL DESIGN
LANDFILL DETAILS

SIZE D
IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE IDENT. NO.
00000

PROJECT LOCATION
CONCORD, CALIFORNIA

CONSTR. CONTR. NO.
000-00-X-000

SPECIFICATION
00-00-0000

NAVFAC DWG. NO.
DS.000.0000

DWG. NO.
C-102

SHEET 7 OF 7

APPENDIX C
REVISED CONSTRUCTION SPECIFICATIONS

TABLE OF CONTENTS

SECTION 00501 LIST OF DRAWINGS

PART 1 GENERAL

1.1 SUMMARY

This section lists the drawings for the project.

1.2 CONTRACT DRAWINGS

Contract Drawings are as follows:

Drawing No.	Revision No.	Title
G-1	0	Vicinity Map, Site Location Map, and Sheet Index
C-1	0	Preconstruction Surface Topography and Site Conditions (September 2001)
C-2	0	Top of Foundation Fill Layer
C-3	0	Top of Vegetative Topsoil Cover
C-100	0	Final Cap Cross Sections
C-101	0	Cross Section Details
C-102	0	Final Remedial Design Landfill Details

END OF SECTION

SECTION 01110 SUMMARY OF WORK

PART 1 GENERAL

1.1 PROJECT DESCRIPTION

The work includes preparing a construction stormwater permit, stormwater pollution prevention plan, and construction quality control plan; preparing the site; establishing sediment control facilities; installing surface water controls to prevent inundation of the work site; dewatering of the subgrade as necessary during construction; importing and compacting imported fill; placing the geosynthetic layers indicated on the plans; placing imported top soil; final grading and construction of stormwater drainage improvements (drainage ditches) and wetland compatible soil; installing gas monitoring probes and gas vents; revegetating the final cap and designated wetland area; and performing incidental related work. Contractor is prohibited from any excavations on site because of the prior discovery of munitions and explosives of concern (MEC). The contractor shall conduct all site operations on the existing landfill surface under the observation of a qualified unexploded ordnance (UXO) technician (see Section 01110, Part 2).

The work is being performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This contract implements the selected remedial action documented in the Record of Decision (ROD) signed by the Navy on March 4, 2004, and the U.S. Environmental Protection Agency on May 17, 2004. The California Environmental Protection Agency's Department of Toxic Substances Control signed the ROD on July 21, 2004, and the San Francisco Bay Regional Water Quality Control Board (Water Board) provided a letter of concurrence on May 27, 2004.

Since the ROD was signed, the project has undergone two revisions. The first was considered insignificant and involved the use of geosynthetic materials for the cap in lieu of a compacted clay cap. The second modification eliminated all waste excavation at the site because of the possibility of encountering MEC. This modification was considered significant because of the increased cost, additional fill placement, and enlarged landfill footprint. The significant change is documented in the "Final Explanation of Significant Differences, Site 1, Tidal Area Landfill, Naval Weapons Station Seal Beach, Detachment Concord," dated October 31, 2007, and prepared by Tetra Tech EM Inc. on behalf of the Navy.

1.2 LOCATION

The work will be performed at Installation Restoration Site 1, Tidal Area Landfill, Naval Weapons Station Seal Beach Detachment Concord, in Concord, California, as shown on the Drawings.

1.3 SUBMITTALS

Submit the following within 30 days after contract award:

1.3.1 SD-01 Preconstruction Submittal

Remedial Action Work Plan (RAWP), consisting of

a. List of contact personnel
b. Detailed Construction Schedule, including sequence of construction
c. Project Work Plan/Grading Plan, including site history (site history section of the RAWP write-up will be supplied to the Contractor), project scope, key personnel, remedial activities, and work requirements (including mobilization, clearing/grubbing, waste management, including plans to store, reuse, or dispose of water generated during dewatering, grading, and site restoration).
d. Site Health and Safety Plan
e. Environmental Protection Plan
f. Stormwater Pollution Protection Plan
g. Quality Control (QC) Plan

1.4 CONTRACTOR PERSONNEL REQUIREMENTS

1.4.1 Subcontractors and Personnel

Furnish a list of contact personnel of the Contractor and subcontractors, including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.4.2 Contact Personnel List

Submit for approval, at least 15 days in advance of the desired date of entry, an original alphabetical list of personnel who require entry into Government property to perform work on the project. Furnish for each person:

a. Name
b. Date and place of birth
c. Citizenship
d. Social Security Number
e. Home address

The request for personnel passes shall be accompanied with the following certification:

1.4.3 Identification Badges

The project is being performed on a site with restricted access. Identification badges that allow site access will be furnished without charge. Application for and use of badges will be as directed by the Navy. Immediately report lost or stolen badges to the Contracting Officer. All badges must be returned at the completion of the project.

1.5 CONTRACTOR ACCESS AND USE OF PREMISES

1.5.1 Base Regulations

Ensure that Contractor personnel working on the base become familiar with and obey base regulations. Keep within the limits of the work and avenues of ingress and egress identified by the Navy. Do not enter restricted areas unless required to do so and until cleared for entry. Permission to interrupt any station roads or utility services shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption. The Contractor's equipment shall be conspicuously marked for identification. All contractor personnel shall sign in at Building 123 every working day.

1.5.2 Working Hours

Regular working hours shall consist of a period established by the Contracting Officer between 6:00 a.m. and 6:00 p.m., Monday through Saturday, excluding Government holidays. The Navy will restrict access to the site during certain operations for safety. These dates are not presently scheduled. For the basis of preparing scheduling assumptions, the Contractor should assume two work stoppages will occur at separate times during the project, each of a 14-day duration.

1.5.3 Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval. Provide written request 7 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress. During periods of darkness, work shall be lighted in a manner approved by the Contracting Officer.

1.5.4 Unauthorized Access

Ensure that unauthorized personnel do not have access to the area during the construction period.

1.6 UNDERGROUND FACILITIES

The locations of existing underground utilities are unknown. Verify the locations of all utilities that may be present. Scan the construction site boundaries with electromagnetic or sonic

equipment and determine where utilities enter areas of proposed construction. Mark the surface of the ground where existing underground utilities are discovered. Verify the location and elevation of existing piping, utilities, and other types of underground obstructions not indicated but discovered during scanning. Protect all utilities encountered during construction.

1.7 SCHEDULE

Contractor shall schedule construction activity, in addition to other stated requirements, within the constraints and fulfilling the requirements of Section 01575, Temporary Environmental Controls; Section 02300, Earthwork; and Section 02922, Landscaping.

Contract Line Item No. 0001 (Base bid) shall have a completion period as follows:

Sub-Line Item No. 0001A (Preconstruction Submittals) completion period of thirty (30) days from date of award.

Sub-Line Item No. 0001B (Phase I Site Work, Installation of 3 Gas Monitoring Probes) completion period of 40 (forty) days from date of award.

Contract Line Item No. 0002 (Option Work) shall have a completion period as follows:

Sub-Line Item No. 0002A (Phase II Construction- cap) completion period of one hundred eighty (180) days from date of Option award.

Sub-Line Item No. 0002B (Vegetation Establishment Period) completion period of three hundred sixty (360) days from date of Option award.

1.8 DELAYS

Notify the Contracting Officer of delays or changes in construction schedule within 48 hours. Cessation of construction activities resulting from delays shall not constitute the release of Contractor's responsibility to maintain a tidy, secured, and protected site. In such case, Contractor shall protect all surfaces from erosion and all materials from degradation. When construction activities resume, Contractor shall return grades and installed items to their condition before construction ceased.

1.9 PROJECT WORK PLAN/GRADING PLAN

Contractor shall prepare a Work Plan describing the proposed implementation of construction in accordance with the requirements contained in the Contractor's basic contract. The Work Plan shall include proposed sources of imported fills, the names of analytical laboratories proposed, and methods proposed for control and disposal of surface water/groundwater.

The Work Plan shall contain a Grading Plan that describes the proposed grading methods, including equipment and sequencing. The Grading Plan shall include an estimate of the volume of imported soil required to construct the project and shall indicate the proposed sources of imported materials. In addition, the plan shall include the proposed method of dewatering for construction below the water table and for storage, reuse, or disposal of water generated during dewatering.

2.0 MUNITIONS AND EXPLOSIVES OF CONCERN

The Tidal Area Landfill, along with the entire Tidal Area landholding of Naval Weapons Station Seal Beach Detachment Concord, is considered to be within an area that potentially contains MEC from the 1944 Port Chicago explosion on Navy property. Based on the discovery of MEC in the landfill during the last phase of work, the Navy has decided to prohibit all future excavation at the site so that any MEC present at the site will remain undisturbed. To protect worker health and safety, the Contractor shall prepare and implement standard operating procedures for visually detecting, recognizing, and properly responding (for example, stopping work and reporting) if additional MEC is discovered during the work. These procedures shall be prepared by a qualified UXO technician who is knowledgeable of proper handling of MEC; the procedures shall be included in the Site Health and Safety Plan. MEC awareness training to all site workers shall also be performed by the Contractor as part of its Safety and Health on-site briefings. The Contractor will be required to have a UXO qualified technician on site during all times when equipment is working on the existing landfill surface or when fill is being spread and compacted on the existing surface of the landfill. The UXO technician shall remain on call during the rest of the project for construction support should suspect items be encountered. The on-call UXO qualified technician should be able to arrive at the job site within 90 minutes of being contacted. The standard operating procedures shall include completion of the required Navy reporting form (Munitions Response Site Identification and Notification Report) should MEC be discovered, in accordance with the Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8020.15.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Areas outside the construction area, as indicated on the Drawings, shall not be disturbed. Take special care to minimize disturbance to any wetland area beyond the limit of final fill.

END OF SECTION

SECTION 01330 SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Submittal

Shop Drawings, product data, samples, and administrative submittals presented for review and approval. Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2 Types of Submittals

All submittals are classified as indicated in Paragraph 1.2, Schedule of Submittal Descriptions. The submittals also are grouped as follows:

a. Shop Drawings: As used in this section, drawings, schedules, diagrams, and other data prepared specifically for this Contract, by the Contractor, or through the Contractor by way of a subcontractor, manufacturer, supplier, distributor, or other lower-tier contractor, to illustrate a portion of the work.

b. Product data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate a portion of the work, but not prepared exclusively for this Contract.

c. Samples: Physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to a portion of the work illustrate a portion of the work, or establish standards for evaluating the appearance of the finished work or both.

d. Administrative submittals: Data presented for review and approval to ensure that the administrative requirements of the project are adequately met but not to ensure directly that the work is in accordance with the design concept and in compliance with the Contract documents.

1.2 SCHEDULE OF SUBMITTAL DESCRIPTIONS (SD)

SD-01, Preconstruction Submittals

- Certificates of insurance
- Surety bonds
- List of proposed subcontractors

- List of proposed products
- Schedule of values
- RAWP, including the following:
  - Work Plan/Grading Plan
  - Health and Safety Plan
  - Environmental Protection Plan
  - Stormwater Pollution Protection Plan
  - Quality Control Plan

SD-02, Shop Drawings

Drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the contractor for integrating the product or system into the project.

Drawings prepared by or for the contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03, Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions, and brochures illustrating size, physical appearance, and other characteristics of materials or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-04, Samples

Physical examples of materials, equipment, or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards that can be used to judge the work.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mockups constructed on the project site to establish standards that can be used to judge the work. Includes assemblies or portions of assemblies that are to be incorporated into the project and those that will be removed at the conclusion of the work.

SD-05, Design Data

Calculations, mix designs, analyses, or other data pertaining to a part of the work.

SD-06, Test Reports

Report signed by authorized official of testing laboratory that a material, product, or system identical to the material, product, or system to be provided has been tested in accord with specified requirements. (Testing must have occurred within 3 years of the date of contract award for the project.)

Report that includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to the job site.

Report that includes finding of a test made at the job site or on a sample taken from the job site, on a portion of work during or after installation.

Investigation reports.

Daily checklists.

Final acceptance test and operational test procedure.

SD-07, Certificates

Statements signed by responsible officials of the manufacturer of the product, system, or material attesting that the product, system, or material meets the specification requirements. Must be dated after award of the project contract and clearly name the project.

Document required of the Contractor, or of a supplier, installer, or subcontractor through the Contractor, the purpose of which is to further the quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Confined space entry permits.

SD-08, Manufacturer's Instructions

Preprinted material describing the installation of a product, system, or material, including special notices and Material Safety Data Sheets concerning impedances, hazards, and safety precautions.

SD-09, Manufacturer's Field Reports

Documentation of the testing and verification of actions taken by the manufacturer's representative to confirm compliance with the manufacturer's standards or instructions.

Factory test reports.

SD-10, Operation and Maintenance Data

Data intended to be incorporated in operations and maintenance manuals.

SD-11, Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

As-built Drawings.

As-built Field Summary Report.

Special warranties.

Posted operating instructions.

Training plan.

1.2.1 Approving Authority

The person authorized to approve a submittal.

1.2.2 Work

As used in this section, on- and off-site construction required by the Contract documents, including labor necessary to produce the construction and materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.3 SUBMITTALS

Submit the following in accordance with the requirements of this section.

1.3.1 SD-11, Closeout Submittals

a. Submittal register; G
b. As-built drawings; G
c. Special warranties; G
d. Posted operating instructions; G
e. Training plan; G
f. As-built field summary report; G

1.4 USE OF SUBMITTAL REGISTER/DATABASE

Prepare and maintain a submittal register as work progresses. Use the electronic submittal register program furnished by the Government or any other format. Do not change data that are output in columns (c), (d), (e), and (f) as delivered by the Government; retain data that are output in columns (a), (g), (h), and (i) as approved.

1.4.1 Submittal Register

Submit a hard copy of the submittal register and also as an electronic database. Submit with the quality control plan and the project schedule required by Section 01450, Quality Control. Do not change data in columns (c), (d), (e), and (f) as delivered by the Government. Verify that all submittals required for the project are listed and add missing submittals. Complete the following on the register:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for the approving authority to receive submittals.

Column (h) Contractor Approval Date: Date the Contractor needs approval of the submittal.

Column (i) Contractor Material: Date that the Contractor needs material delivered to Contractor control.

1.4.2 Contractor Use of the Submittal Register

Update the following fields in the submittal register:

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (j) Action Code (k): Date of action used to record Contractor's review when forwarding submittals to quality control (QC).

Column (l): List date of submittal transmission.

Column (q): List date approval is received.

1.4.3 Approving Authority Use of the Submittal Register

Update the following fields in the submittal register:

Column (b).

Column (l): List date of submittal receipt.

Column (m) through (p).

Column (q): List date returned to Contractor.

1.4.4 Contractor Action Code and Action Code

Entries used will be as follows:

NR - Not received
AN - Approved as noted
A - Approved
RR - Disapproved, Revise, and Resubmit

1.4.5 Copies Delivered to the Government

Deliver one copy of the submitted register updated by the Contractor to Government with each invoice request. Deliver in electronic format, unless a paper copy is requested by the Contracting Officer.

1.5 PROCEDURES FOR SUBMITTALS

1.5.1 Reviewing, Certifying, and Approving Authority

The QC Manager, in accordance with Section 01450, Quality Control, shall be responsible for reviewing and certifying that submittals are in compliance with contract requirements. The approving authority on submittals is the QC Manager, unless otherwise specified for the specific submittal. At each "Submittal" paragraph in the individual specification sections, the notation "G" following a submittal item indicates that the Contracting Officer is the approving authority.

1.5.2 Constraints

a. Submittals listed or specified in this Contract shall conform to the provisions of this section, unless explicitly stated otherwise.

b. Submittals shall be complete for each definable feature of work; components of the definable feature interrelated as a system shall be submitted at the same time.

c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate, subsequent submittals, the submittal will be returned without review.

d. Approval of a separate material, product, or component does not imply approval of the assembly in which the item functions.

1.5.3 Scheduling

a. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of the work, so work will not be delayed by submittal processing. Allow for potential requirements to resubmit. For the basis of preparing scheduling assumptions, the Contractor should assume two work stoppages will occur at separate times during the project, each of up to 14 days duration. These stoppages will prevent the Contractor from accessing the Tidal Area due to Army operations.

b. Except as specified otherwise, allow a review period, beginning with receipt by the approving authority, that includes at least 15 working days for submittals for QC Manager approval and 20 working days for submittals for Contracting Officer approval. The period of review for submittals with Contracting Officer approval begins when the Government receives the submittal from the QC Manager. The period of review for each resubmittal is the same as for the initial submittal.

1.5.4 Variations

Variations from contract requirements require Government approval pursuant to Contract Clause "FAR 52.236-21, Specifications and Drawings for Construction," and will be considered where advantageous to the Government.

When proposing a variation, submit a written request to the Contracting Officer, with documentation of the nature and features of the variation and an explanation why the variation is desirable and beneficial to the Government. If lower cost is a benefit, also include an estimate of the cost saving. Identify the proposed variation separately and include documentation for the proposed variation along with the required submittal for the item. When submitting a variation for approval, the Contractor warrants the following:

1.5.4.1 Variation Is Compatible

The Contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of the work.

1.5.4.2 Review Schedule Is Modified

In addition to the normal submittal review period, a period of 10 working days will be allowed for consideration by the Government of submittals with variations.

1.5.5 Contractor's Responsibilities

a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and Contract documents.

b. Transmit submittals to the QC Manager in orderly sequence; in accordance with the approved submittal register; and to prevent delays in the work, delays to the Government, or delays to separate contractors.

c. Advise the Contracting Officer of the variation, as required by Paragraph 1.5.4, Variations.

d. Correct and resubmit submittal as directed by the approving authority. When resubmitting disapproved transmittals or transmittals noted for resubmittal, the Contractor shall provide a copy of the transmittal submitted previously, including all reviewer comments, for use by the approving authority. Direct specific attention, in writing or on resubmitted submittal, to revisions not requested by the approving authority on previous submissions.

e. Furnish additional copies of submittals when requested by the Contracting Officer, to a limit of 20 copies per submittal.

f. Complete work that must be accomplished as a basis of a submittal in time to allow the submittal to occur as scheduled.

g. Ensure no work has begun until submittals for that work have been returned as "approved," or "approved as noted" or "approved except as noted; resubmission not required," except to the extent that a portion of the work must be accomplished as a basis for the submittal.

1.5.6 QC Manager Responsibilities

a. Note the date the submittal was received from the Contractor on each submittal.

b. Review each submittal and check and coordinate each submittal with requirements of the work and Contract documents.

c. Review submittals for conformance with project design concepts and compliance with Contract documents.

d. Act on submittals, determining the appropriate action based on the QC Manager's review of the submittal.

(1) When the QC Manager is the approving authority, take the appropriate action on the submittal from the possible actions defined in Paragraph 1.5.8, Actions Possible.

(2) When the Contracting Officer is the approving authority or when a variation has been proposed, forward the submittal to the Government with the certifying statement or return the submittal marked "not reviewed" or "revise and resubmit," as appropriate. The QC Manager's review of the submittal determines the appropriate action.

e. Ensure that material is clearly legible.

f. Stamp each sheet of each submittal with the QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When the approving authority is the Contracting Officer, the QC Manager will certify submittals forwarded to the Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with Contract Number [_____], is in compliance with the contract Drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval."

Certified by Submittal Reviewer _____ Date _____
(Signature when applicable)

Certified by QC Manager _____ Date _____
(Signature)

(2) When the approving authority is the QC Manager, the QC Manager will use the following approval statement when returning submittals to the Contractor as "approved" or "approved as noted."

"I hereby certify that the (material) (equipment) (article) shown and marked in this submittal and proposed to be incorporated with Contract Number [_____], is in compliance with the contract Drawings and specification, can be installed in the allocated spaces, and is _____ approved for use."

Certified by Submittal Reviewer _____ Date _____
(Signature when applicable)

Approved by QC Manager _____ Date _____
(Signature)

g. Sign the certifying statement or approval statement. The person signing the certifying statements shall be the QC Manager member designated in the approved QC plan. The signatures shall be original and in ink. Stamped signatures are not acceptable.

h. Update the submittal register [database] as submittal actions occur and maintain the submittal register at the project site until final acceptance of all work by the Contracting Officer.

i. Retain a copy of approved submittals at the project site, including the Contractor's copy of approved samples.

1.5.7 Government's Responsibilities

When the approving authority is the Contracting Officer, the Government will:

a. Note the date the submittal was received from the QC Manager on each submittal for which the Contracting Officer is the approving authority.

b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with Contract documents.

c. Identify returned submittals with one of the actions defined in Paragraph 1.5.8, Actions Possible, and with markings appropriate for the action indicated.

1.5.8 Actions Possible

Submittals will be returned with one of the following notations:

a. Submittals marked "not reviewed" will indicate the submittal has been previously reviewed and approved, is not required as a submittal, does not show evidence of being reviewed and approved by the Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not

reviewed. Returned submittals deemed to lack review by the Contractor or to be incomplete shall be resubmitted with appropriate action, coordination, or change.

b. Submittals marked "approved" or "approved as submitted" authorize the Contractor to proceed with the work covered.

c. Submittals marked "approved as noted" or "approved except as noted; resubmission not required" authorize the Contractor to proceed with the work as noted provided the Contractor takes no exception to the notations.

d. Submittals marked "revise and resubmit" or "disapproved" indicate that the submittal is incomplete or does not comply with the design concept or the requirements of the Contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until the resubmittal is approved.

1.6 FORMAT OF SUBMITTALS

1.6.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels, to the office of the approving authority. Transmit submittals with a transmittal form that is prescribed by the Contracting Officer and standard for the project. The transmittal form shall identify the Contractor, indicate the date of the submittal, and include information prescribed by the transmittal form and required in Paragraph 1.6.2, Identifying Submittals. Process transmittal forms to record actions regarding sample panels and sample installations.

1.6.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on the transmittal form. Mark each copy of each submittal identically, with the following:

a. Project title and location.

b. Construction Contract number.

c. The section number of the specification section by which the submittal is required.

d. The submittal description (SD) number of each component of the submittal.

e. When a resubmission, an alphabetic suffix on the submittal description, for example, SD-10A, to indicate the resubmission.

f. The name, address, and telephone number of the subcontractor, supplier, manufacturer, and any other second-tier contractor associated with the submittal.

g. Product identification and location in project.

1.6.3 Format for Product Data

a. Present product data submittals for each section as a complete, bound volume. Include a table of contents listing page and catalog item numbers for product data.

b. Indicate, by prominent notation, each product that is being submitted; indicate the specification section number and paragraph number to which it pertains.

c. Supplement product data with material prepared for the project to satisfy submittal requirements for which product data do not exist. Identify this material as developed specifically for the project.

1.6.4 Format for Shop Drawings

a. Shop Drawings shall not be less than A4, 8.5 by 11 inches, nor more than AO, 30 by 42 inches.

b. Present shop Drawings as a part of the bound volume for the submittals required by the section. Present larger Drawings in sets.

c. Include on each Drawing the Drawing title, number, date, and revision numbers and dates, in addition to the information required in Paragraph 1.6.2, Identifying Submittals.

d. Dimension Drawings, except diagrams and schematic Drawings; prepare Drawings demonstrating interface with other trades to scale. Dimensions of shop Drawings shall be the same unit of measure as indicated on the contract Drawings. Identify materials and products for work shown.

1.6.5 Format of Samples

a. Furnish samples in the sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately the same size as specified:

(1) Color Selection Samples: 2 inches by 4 inches.

1.6.6 Format of Administrative Submittals

a. When the submittal includes a document that is to be used in the project or will become a part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document, but to a separate sheet accompanying the document.

1.7 QUANTITY OF SUBMITTALS

1.7.1 Number of Copies of Product Data

Submit six copies of submittals of product data requiring review and approval only by the QC Manager and seven copies of product data requiring review and approval by the Contracting Officer.

1.7.2 Number of Copies of Shop Drawings

Submit shop Drawings in compliance with the quantity requirements specified for product data.

1.7.3 Number of Samples

Submit two samples, or two sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by the approving authority, and one will be returned to the Contractor.

1.7.4 Number of Copies of Administrative Submittals

Unless otherwise specified, submit the administrative submittals in compliance with the quantity requirements specified for product data.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

SUBMITTAL REGISTER (PART A)

CONTRACT NO: GS-10F-0076K PROJECT TITLE IR Site 1 – Tidal Area, Landfill Cover

SPEC SECTION NO. (a)	SD NO & TYPE OF SUBMITTAL-MATL OR PRODUCT (b)	SPEC PARA NO. (c)	CLASSIF/ APPR BY CO (d)	GOVT OR A/E REVR (e)	TRANS CONTL NO. (f)	PLANNED SUBMITTAL DATE (g)
01110	SD-01, PRECONSTRUCTION SUBMITTAL a. Remedial Action Work Plan (RAWP)	1.3.1	G			
01330	SD-11, CLOSEOUT SUBMITTALS a. Submittal register b. As-built drawings c. Special warranties d. Posted operating instructions e. Training plan f. As-built field summary report	1.3.1	G G G G G G			
01450	SD-01, PRECONSTRUCTION SUBMITTAL a. Quality Control (QC) Plan (included in RAWP)	1.2.1	G			
01500	SD-02, DRAWINGS a. Traffic Control Plan b. Project Sign	1.2.1	G			
01525	SD-01, PRECONSTRUCTION SUBMITTALS a. Site Health and Safety Plan (included in RAWP) b. Accident Prevention Plan c. Activity Hazard Analysis	1.2.1	G G G			
01525	SD-06 REPORTS a. Accident Reports b. Regulatory Citations and Violations	1.2.2	G G			
01525	SD-07 CERTIFICATES a. Hot work permit b. Contractor Safety Self-Evaluation Checklist	1.2.3	G			
01575	SD-01, PRECONSTRUCTION SUBMITTALS a. Environmental Protection Plan (included in RAWP) b. Site Health and Safety Plan (included in RAWP) c. Stormwater Pollution Prevention Plan (included in RAWP)	1.4.1	G G G			

SPEC SECTION NO. (a)	SD NO & TYPE OF SUBMITTAL-MATL OR PRODUCT (b)	SPEC PARA NO. (c)	CLASSIF/ APPR BY CO (d)	GOVT OR A/E REVR (e)	TRANS CONTL NO. (f)	PLANNED SUBMITTAL DATE (g)
01575	SD-07, CERTIFICATES a. Solid waste disposal permit/ manifests b. Disposal permit/manifests for hazardous waste c. Erosion and Sediment Control Inspection Reports	1.4.2	 G G G			
02300	SD-06, FIELD TEST REPORTS a. Soil cover and foundation layer imported material tests b. Soil cover and foundation layer imported material metals content	1.3.2				
02300	SD-07, CERTIFICATES a. Topsoil quality b. California Registered Civil Engineer or Geologist certification	1.3.3				
02300	SD-09, MANUFACTURER'S TEST REPORT a. Top soil analysis	1.3.4	 G			
02300	SD-11, CLOSEOUT SUBMITTALS a. Final soil cover survey with As-Built Drawings b. Survey information on permanent local site monuments	1.3.5				
02373	SD-03, PRODUCT DATA a. Quality Control Manual for geotextile	1.3				
02377	SD-07, CERTIFICATES a. Manufacturers quality control data	1.3	 G			
02521	SD-03, MANUFACTURER'S CATALOGUE DATA a. Pipe b. Fittings c. Solvent-Cement	1.2.1				
02521	SD-06, FIELD TEST REPORTS a. Post construction methane tests	1.2.2				
02522	SD-03, PRODUCT DATA a. Casing b. Screen c. Filter pack d. Bentonite e. Cement f. Protective cover	1.2.1				

SPEC SECTION NO. (a)	SD NO & TYPE OF SUBMITTAL-MATL OR PRODUCT (b)	SPEC PARA NO. (c)	CLASSIF/ APPR BY CO (d)	GOVT OR A/E REVR (e)	TRANS CONTL NO. (f)	PLANNED SUBMITTAL DATE (g)
02522	SD-11, CLOSEOUT SUBMITTAL a. Horizontal location (northing and easting) b. Top of casing (TOC) elevation c. Adjacent ground elevation d. Depth from top of casing to bottom of well	1.2.2				
02621	SD-03, PRODUCT DATA a. Quality Control Manual for geonet	1.3				
02621	SD-07, CERTIFICATES a. Manufacturers quality control data	1.3	G			
02630	SD-03, PRODUCT DATA a. Silt Fence b. Sediment Control Logs c. Erosion Control Matting	1.2.1				
02630	SD-07, Certificates a. Silt Fence b. Sediment Control Logs	1.2.2				
02700	SD-02, DRAWINGS a. Installation layout drawings	1.3.A	G			
02700	SD-03 PRODUCT DATA a. Material warrantees b. Recycled polymer statement c. Installer's geosynthetic field installation quality assurance plan	1.3.B				
02700	SD-07 CERTIFICATES a. Resin data certification	1.3.C				
02700	SD-11 CLOSEOUT SUBMITTALS a. As Built Drawings b. Statement of compliance with specifications	1.3.D				
02821	SD-02, DRAWINGS a. Warning sign	1.2.1	G			
02922	SD-01, PRECONSTRUCTION SUBMITTAL a. Vegetation Establishment Plan	1.2.1				
02922	SD-07, CERTIFICATES a. Seed b. Mulch c. Binder d. Fertilizer e. Lime	1.2.2	G			

END OF SECTION

SECTION 01450 QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ASTM INTERNATIONAL

ASTM D 3740	(2001) Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(2000) Agencies Engaged in the Testing and/or Inspection of Materials used on Construction

1.2 SUBMITTALS

Submit the following in accordance with Section 01330 Submittal Procedures.

1.2.1 SD-01, Preconstruction Submittal

a. Quality Control (QC) plan (QC Plan shall be included as part of the RAWP submittal; also see Section 1110); G

1.3 INFORMATION FOR THE CONTRACTING OFFICER

Deliver the following to the Contracting Officer:

a. Combined Contractor Production Report/Contractor QC Report (1 sheet): Original and one copy by 10:00 a.m. the next working day after each day that work is performed;

b. QC Specialist Reports: Originals and one copy by 10:00 a.m. the next working day after each day that work is performed, attached to the Contractor QC Report;

c. Field Test Reports: Two copies, within 2 working days after the test is performed, attached to the Contractor QC Report;

d. Monthly Summary Report of Tests: Two copies attached to the Contractor QC Report;

e. Testing Plan and Log: Two copies, at the end of each month;

f. Rework Items List: Two copies, by the last working day of the month;

g. QC Meeting Minutes: Two copies, within 2 working days after the meeting and;

h. QC Certifications: As required by the paragraph titled "QC Certifications."

1.4 QC PROGRAM REQUIREMENTS

The QC program requirements are contained in base Environmental Multi-Award Contracts for Remediation (EMAC).

1.5 QC ORGANIZATION

1.5.1 QC Manager

1.5.1.1 Duties

Contractor shall provide a QC Manager at the work site to implement and manage the QC program. In addition to implementing and managing the QC program, the QC Manager may perform the duties of project superintendent.

The QC Manager is required to attend the Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control, perform submittal review, perform submittal approval, ensure testing is performed, and provide QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by Testing Laboratory personnel and any other inspection and testing personnel required by this contract.

1.5.1.2 Qualifications

An individual with a minimum of 5 years experience as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts that included the major trades that are part of this Contract. The QC Manager shall be a registered engineer or geologist.

1.6 QUALITY CONTROL (QC) PLAN

1.6.1 Requirements

Provide for approval by the Contracting Officer, a QC Plan prepared by a registered professional engineer or certified engineering geologist and submitted in accordance with the requirements of the EMAC Contract N68711-02-D-8303. For the final landfill cover, the QC Plan shall be in conformance with the requirements of the California Integrated Waste Management Board (CIWMB) for landfill covers (CCR 27 § 20324).

1.7 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC Plan and prior to the start of construction, meet with the Contracting Officer to present the QC program required by this Contract. The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, and the coordination of the Contractor's management, production, and QC personnel. At the meeting, the Contractor will be required to explain in detail how the three phases of control will be implemented for each definable feature of work. As a minimum, the Contractor's personnel required to attend shall include an officer of the firm, the project manager, project superintendent, QC Manager, Architectural-Engineering (A-E) Firm, and subcontractor representatives. Each subcontractor who will be assigned QC responsibilities shall have a principal of the firm at the meeting. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor, the A-E, and the Contracting Officer. A copy of the signed minutes shall be provided to all attendees by the Contractor.

1.8 QC MEETINGS

After the start of construction, the QC Manager shall conduct weekly QC meetings at the work site with the project superintendent. The QC Manager shall prepare the minutes of the meeting and provide a copy to the Contracting Officer within 2 working days after the meeting. The Contracting Officer may attend these meetings. The QC Manager shall notify the Contracting Officer at least 48 hours in advance of each meeting. As a minimum, the following shall be accomplished at each meeting:

a. Review the minutes of the previous meeting

b. Review the schedule and the status of work:

- Work or testing accomplished since last meeting
- Rework items identified since last meeting
- Rework items completed since last meeting

c. Review the status of submittals:

- Submittals reviewed and approved since last meeting
- Submittals required in the near future

d. Review the work to be accomplished in the next 2 weeks and the documentation required:

- Establish completion dates for rework items
- Update the schedule showing planned and actual dates of the preparatory, initial, and follow-up phases, including testing and any other inspection required by this Contract
- Discuss construction methods and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each definable feature of work

- Discuss status of off-site work or testing
- Documentation required

e. Resolve QC and production problems:
   - Assist in resolving Request for Information issues

f. Address items that may require revising the QC Plan:
   - Changes in QC organization personnel
   - Changes in procedures.

1.9 THREE PHASES OF CONTROL

The three phases of control shall adequately cover both on-site and off-site work and shall include the following for each definable feature of work.

1.9.1 Preparatory Phase

Notify the Contracting Officer at least 1 workday in advance of each preparatory phase. Conduct the preparatory phase with the superintendent and the foreman responsible for the definable feature. Document the results of the preparatory phase actions in the daily Contractor QC Report and in the QC Checklist. Perform the following prior to beginning work on each definable feature of work:

a. Review each paragraph of the applicable specification sections.

b. Review the Contract Drawings.

c. Verify that appropriate shop Drawings and submittals have been submitted and approved. Verify receipt of approved factory test results, when required.

d. Review the testing plan and ensure that provisions have been made to provide the required QC testing.

e. Examine the work area to ensure that the required preliminary work has been completed.

f. Examine the required materials, equipment, and sample work to ensure that they are on hand and conform to the approved shop Drawings and submitted data.

g. Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.

h. Discuss construction methods and the approach that will be used to provide quality construction for each definable feature of work.

1.9.2 Initial Phase

Notify the Contracting Officer at least 1 workday in advance of each initial phase. When construction crews are ready to start work on a definable feature of work, conduct the initial phase with the superintendent and the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily Contractor QC Report and in the QC Checklist. Repeat the initial phase for each new crew to work on site, or when acceptable levels of specified quality are not being met. Perform the following for each definable feature of work:

a. Establish the quality of workmanship required;

b. Resolve conflicts;

c. Review the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met; and

d. Ensure that testing is performed.

1.9.3 Follow-up Phase

Perform the following for ongoing work daily, until the completion of each definable feature of work and document in the daily Contractor QC Report and in the QC Checklist:

a. Ensure the work is in compliance with Contract requirements;

b. Maintain the quality of workmanship required;

c. Ensure that testing is performed; and

d. Ensure that rework items are being corrected.

1.10 SUBMITTAL REVIEW AND APPROVAL

Procedures for submission, review, and approval of submittals are described in Section 1330 – Submittal Procedures

1.11 MATERIALS TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.11.1 Materials Testing Laboratory Requirements

Provide an independent testing laboratory qualified to perform sampling and tests required by this Contract. When the proposed testing laboratory is not accredited by an acceptable accreditation program as described by the paragraph titled "Accredited Laboratories," submit to the Contracting Officer for approval certified statements signed by an official of the testing laboratory attesting that the proposed laboratory meets or conforms to the following requirements:

a. Laboratories engaged in testing of construction materials shall meet the requirements of ASTM E 329.

b. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D 3740.

1.11.2 Accredited Materials Testing Laboratories

Acceptable accreditation programs are the National Institute of Standards and Technology (NIST)/National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO) program, and the American Association for Laboratory Accreditation (A2LA) program. Furnish to the Contracting Officer a copy of the Certificate of Accreditation and Scope of Accreditation and latest directory of the accrediting organization for accredited laboratories. The scope of the laboratory's accreditation shall include the test methods required by the Contract.

1.11.3 Inspection of Materials Testing Laboratories

Prior to approval of non-accredited laboratories, the proposed testing laboratory facilities and records may be subject to inspection by the Contracting Officer. Records subject to inspection include equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the internal QC procedures.

1.11.4 Materials Testing Laboratories Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.11.5 Materials Testing Laboratories Test Results

Cite applicable Contract requirements, tests, or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If item fails to conform, notify Contracting Officer immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month. Attach a copy of the summary report to the last daily Contractor QC Report of each month.

1.11.6 Material Testing Laboratories Test Reports and Monthly Summary Report of Tests

The QC Manager shall furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Contracting Officer. Attach a copy of the summary report to the last daily Contractor QC Report of each month.

1.12 ANALYTICAL LABORATORY

Soil samples submitted for chemical analysis to verify clean source materials shall be analyzed using EPA SW-846 methods. Analytical laboratory testing shall be performed by State of California-certified analytical laboratories that are pre-approved by the Navy.

1.13 QC CERTIFICATIONS

1.13.1 Contractor Quality Control Report Certification

Each Contractor QC Report shall contain the following statement: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract Drawings and specifications to the best of my knowledge, except as noted in this report."

1.13.2 Invoice Certification

Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that as-built drawings are current and attesting that the work for which payment is requested, including stored material, is in compliance with contract requirements.

1.13.3 Completion Certification

Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested, and is in compliance with the Contract."

1.14 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.14.1 Contractor Production Report

Reports are required for each day that work is performed and shall be attached to the Contractor QC Report prepared for the same day. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Production Reports are to be prepared, signed, and dated by the project superintendent and shall contain the following information:

a. Date of report, report number, name of Contractor, Contract number, title and location of Contract, and superintendent present.

b. Weather conditions in the morning and in the afternoon, including maximum and minimum temperatures.

c. A list of Contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed, and hours worked.

d. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results on the following:

- Attach a copy of the meeting minutes from the daily job safety meeting.
- Were there any lost time accidents? (If YES, attach a copy of the completed Occupational Safety and Health Administration [OSHA] report.)
- Was crane/trenching/scaffold/high voltage electrical/high work done? (If YES, attach a statement or checklist showing inspection performed.)
- Was hazardous material/waste released into the environment? (If YES, attach a description of meetings held and accidents that happened.)

e. A list of equipment/material received each day that is incorporated into the job.

f. A list of construction and plant equipment on the work site including the number of hours used, idle, and down for repair.

g. Include a "remarks" section in this report that will contain pertinent information, including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the Drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered, and a record of visitors to the work site.

1.14.2 Contractor Quality Control Report

Reports are required for each day that work is performed and for every 7 consecutive calendar days of no work and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor QC Reports are to be prepared, signed, and dated by the QC Manager, and shall contain the following information:

a. Identify the control phase and the definable feature of work.

b. Results of the Preparatory Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that, for this definable feature of work, the Drawings and specifications have been reviewed, submittals have been approved, materials comply with approved submittals, materials are stored properly, preliminary work was done correctly, the testing plan has been reviewed, and work methods and schedule have been discussed.

c. Results of the Initial Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work the preliminary work was done correctly, samples have been prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the Contract, and the required testing has been performed, and include a list of who performed the tests.

d. Results of the Follow-up Phase inspections held, including the location of the definable feature of work. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, and that required testing has been performed, and include a list of who performed the tests.

e. Results of the three phases of control for off-site work, if applicable, including actions taken.

f. List the rework items identified, but not corrected, by close of business.

g. List the rework items corrected from the rework items list along with the corrective action taken.

h. Include a "remarks" section in this report that will contain pertinent information, including directions received, QC problem areas, deviations from the QC plan, construction deficiencies encountered, QC meetings held, acknowledgment that as-built drawings have been updated, corrective direction given by the QC Organization, and corrective action taken by the Contractor.

i. Contractor QC Report certification.

1.14.3 Testing Plan and Log

As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Contracting Officer, remarks,

and acknowledgment that an accredited or Contracting Officer-approved testing laboratory was used. Attach a copy of the updated "Testing Plan and Log" to the last daily Contractor QC Report of each month.

1.14.4 Rework Items List

The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Contractor Rework Items List" to the last daily Contractor QC Report of each month. The Contractor shall be responsible for including on this list items needing rework, including those identified by the Contracting Officer.

1.14.5 As-Built Drawings

The QC Manager is required to review the as-built drawings to ensure that as-built drawings are kept current on a daily basis and marked to show deviations that have been made from the Contract Drawings. The QC Manager shall initial each deviation and each revision. Upon completion of work, the QC Manager shall furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.14.6 Report Forms

The following forms, which are attached at the end of this section, are acceptable for providing the information required by the paragraph titled "Documentation." While use of these specific formats is not required, any other format used shall contain the same information:

a. Combined Contractor Production Report and Contractor Quality Control Report (1 sheet), with separate continuation sheet

b. Testing Plan and Log

c. Rework Items List

Forms may be downloaded from the Internet at: http://www.efdlant.navfac.navy.mil/criteria/guidespecs/graphicsonly/forms_for_ufgs_01450n.htm

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01500 TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 REFERENCES

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

Manual on Uniform Traffic Control Devices (FHWA MUTCD) (1988)

1.2 SUBMITTALS

Submit the following in accordance with Section 01330 Submittal Procedures.

1.2.1 SD-02 Drawings

a. Traffic control plan; G

b. Project sign

1.3 TEMPORARY UTILITIES

The Contractor shall coordinate any utility hookups that may be needed for the project, including water, electricity, and telephone services.

1.4 TEMPORARY SANITARY FACILITIES

Provide adequate sanitary conveniences of a type approved for the use of persons employed on the work, properly secluded from public observation, and maintained in such a manner as required or approved by the Contracting Officer. Maintain these conveniences at all times without nuisance. Upon completion of the work, remove the conveniences from the premises, leaving the premises clean and free from nuisance.

1.5 TEMPORARY BUILDINGS AND CONSTRUCTION EQUIPMENT

Locations of the Contractor staging area shall be approved by the Contracting Officer. The trailers or storage buildings shall be suitably painted and kept in a good state of repair. A sign not smaller than 24 inches by 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers shall be anchored to resist high winds and seismic loads, and must meet applicable state or local standards for anchoring mobile trailers.

Naval Weapons Station Seal Beach Detachment Concord is a controlled access facility that is not open to the public. The Contractor shall be responsible for the security of his own materials and equipment.

1.6 IDENTIFICATION OF CONTRACTOR VEHICLES

Each Contractor-provided vehicle and towed trailer shall show the Contractor's name so that it is clearly visible from at least 100 feet on both front doors of the vehicle and both sides of a towed trailer. Removable company identification is acceptable. Contractor-provided vehicle shall at all times display a valid state license plate and safety inspection sticker. Contractor vehicles operated on Government property shall be maintained in a good state of repair.

1.7 PROJECT SIGN

Within 15 days after the commencement of work, provide one project identification sign at a location indicated by the Contracting Officer. Construct the sign in accordance with project sign detail attached at the end of this section. Maintain sign throughout the life of the project. Upon completion of the project, remove the sign from the site.

1.7.1 Project Identification Signboard

A project identification signboard shall be provided in accordance with attached Plate 1, except the word "ARCHITECT" shall be replaced by the word "ENGINEER." The signboard shall be provided at a conspicuous location on or near the job site where directed by the Contracting Officer. Construct signboard in accordance with project identification signboard Plates 3 and 4.

a. The field of the sign shall consist of a 4-by-8-foot sheet of grade B-B, medium-density overlaid exterior plywood.

b. Lumber shall be B or better Southern pine, pressure-preservative treated with pentachlorophenol. Nails shall be aluminum or galvanized steel.

c. The entire signboard and supports shall be given one coat of exterior alkyd primer and two coats of exterior alkyd enamel paint. The lettering and sign work shall be performed by a skilled sign painter using paint known in the trade as bulletin colors. The colors, lettering sizes, and lettering styles shall be as indicated. Where preservative-treated lumber is required, use only cured pressure-treated wood that has had the chemicals leached from the surface of the wood prior to painting.

d. The high-gloss acrylic gold enamel paint used as background for the Navy-applied sticker shall be spray applied automotive quality paint. The 18-inch-diameter applied sticker shall be a silkscreened image in the design indicated, painted on a 2-millimeter transparent polyester film. The weather resistant, self-adhering film shall be rated for a minimum of 2 years of exterior vertical exposure and be mounted to the sign with pressure-sensitive, permanent acrylic adhesive. Shop cut sticker to round shape and

provide pull-off backing sheet on adhesive side of design sticker for shipping. Provide applied design sticker in accordance with attached detail.

e. Sign paint colors (numbers listed below for color identification only)

(1) Blue = Benjamin Moore Paints No. 826.
(2) White = Benjamin Moore Paints No. 873.
(3) Gold = Dupont No. B8014, Metallic gold.

1.8 STATION OPERATION AFFECT ON CONTRACTOR OPERATIONS

1.8.1 Interruption of Vehicular Traffic

If, during the performance of work, it becomes necessary to modify vehicular traffic patterns at any locations, notify the Contracting Officer at least 15 calendar days prior to the proposed modification date, and provide a Traffic Control Plan detailing the proposed controls to traffic movement for approval. The plan shall be in accordance with state and local regulations and the FHWA MUTCD, Part VI. Provide cones, signs, barricades, lights, and other traffic control devices and personnel required to control traffic.

1.9 UNAUTHORIZED ACCESS

Ensure that the public and other unauthorized personnel do not have access to the area during the construction period.

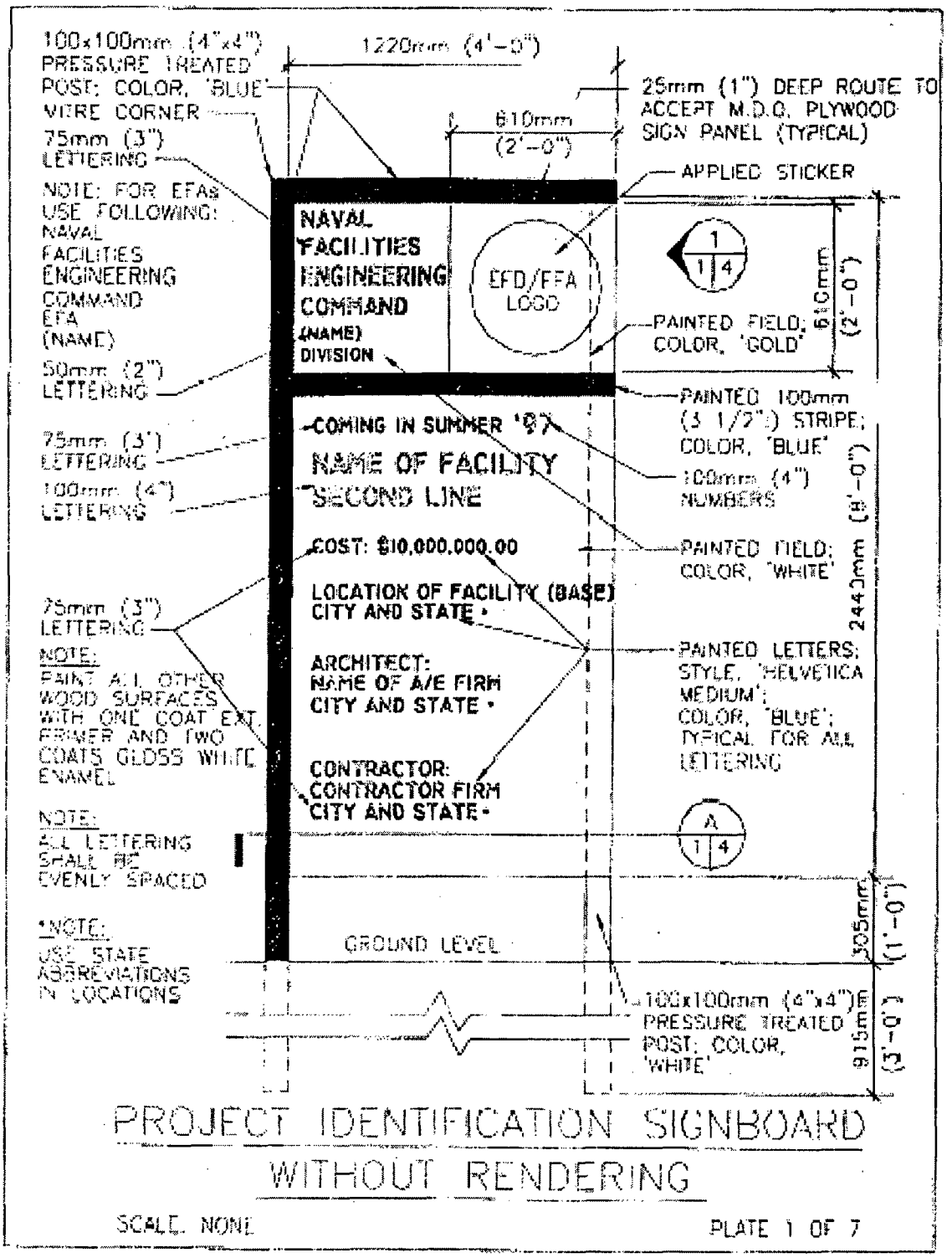
PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

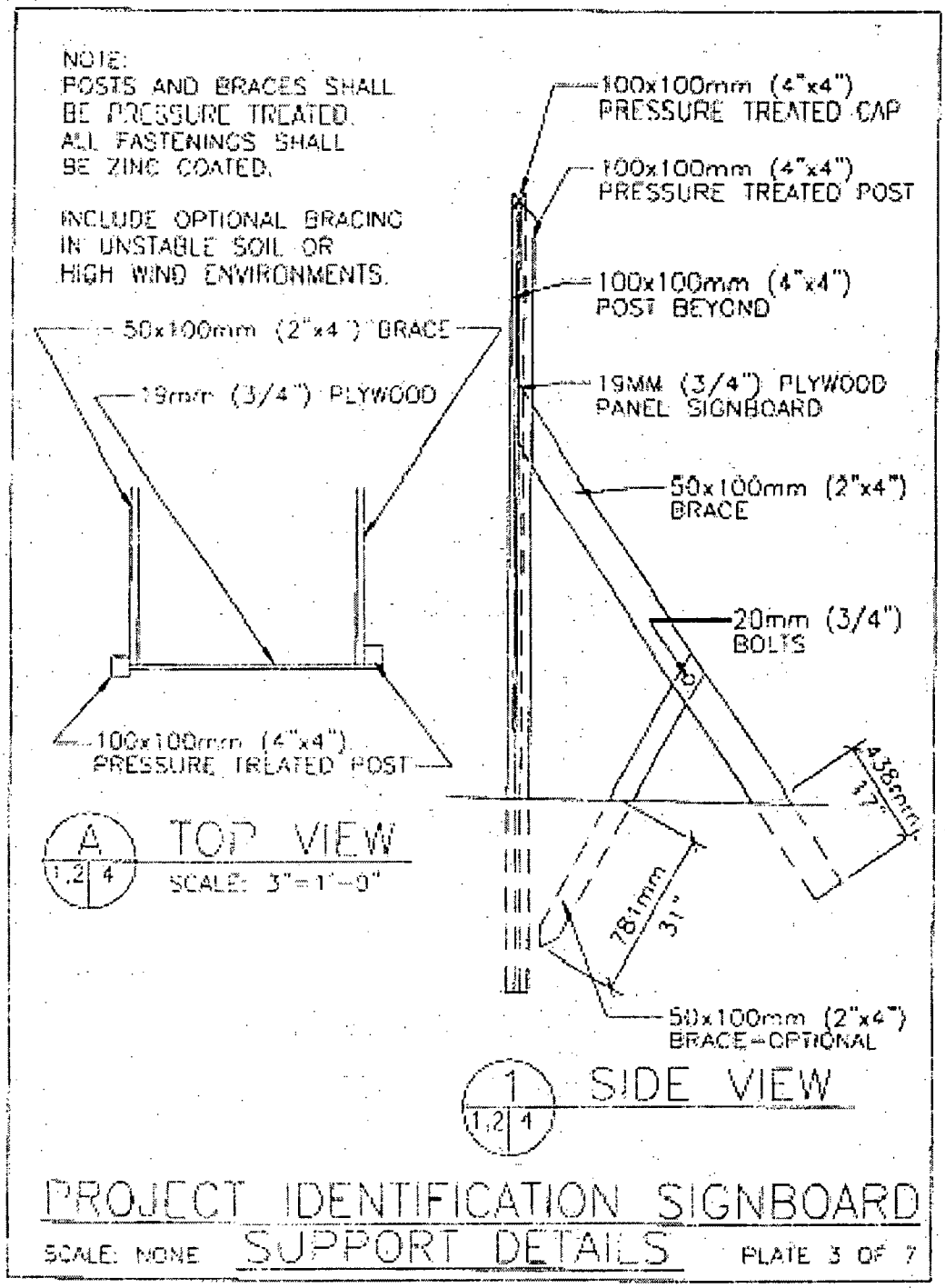


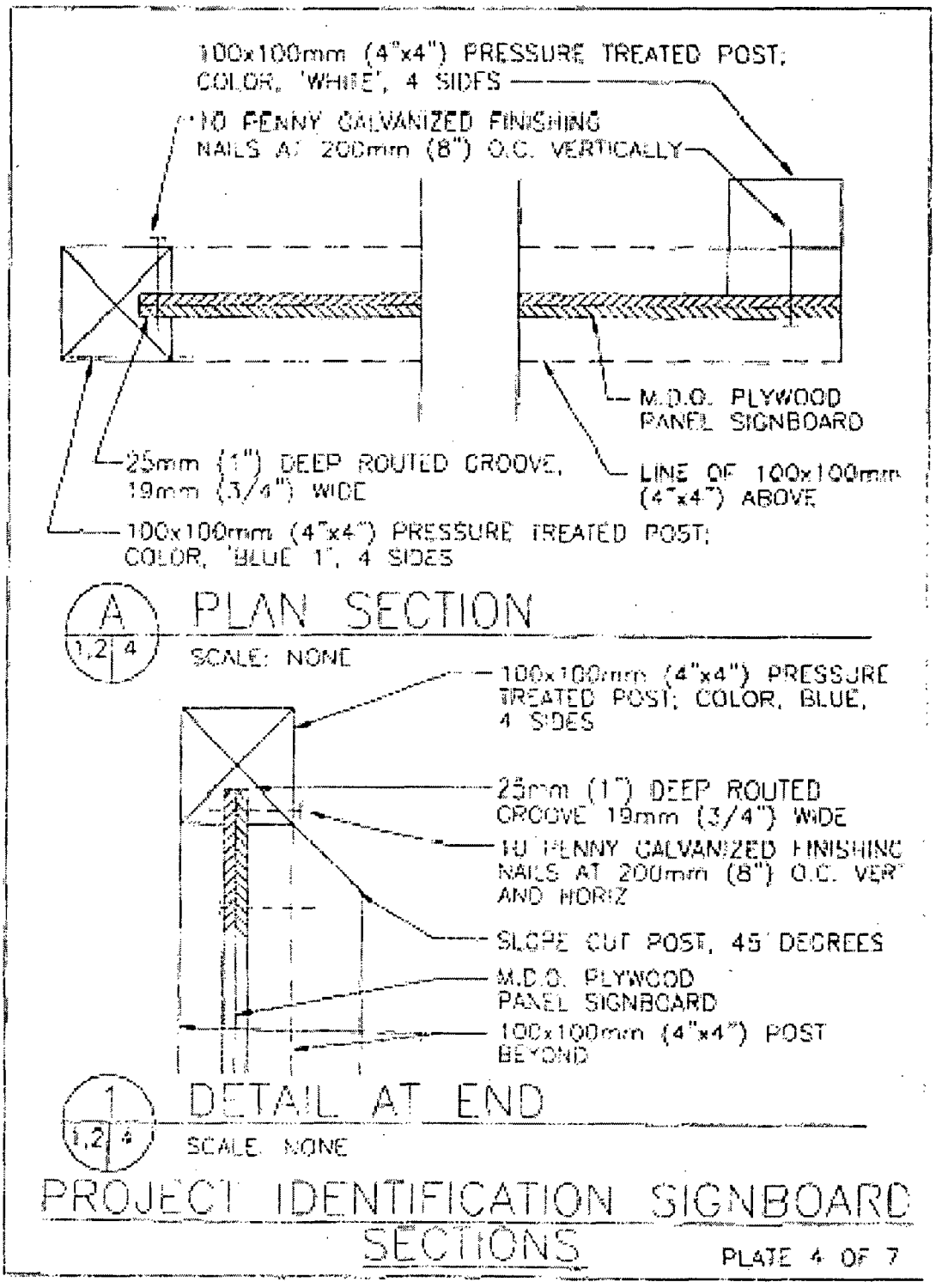
PROJECT IDENTIFICATION SIGNBOARD

WITHOUT RENDERING

SCALE: NONE

PLATE 1 OF 7


NOTE:
POSTS AND BRACES SHALL BE PRESSURE TREATED.
ALL FASTENINGS SHALL BE ZINC COATED.
INCLUDE OPTIONAL BRACING IN UNSTABLE SOIL OR HIGH WIND ENVIRONMENTS.
50x100mm (2"x4") BRACE
19mm (3/4") PLYWOOD
100x100mm (4"x4") PRESSURE TREATED POST
A
1,2 4
TOP VIEW
SCALE: 3"=1'-0"
100x100mm (4"x4") PRESSURE TREATED CAP
100x100mm (4"x4") PRESSURE TREATED POST
100x100mm (4"x4") POST BEYOND
19MM (3/4") PLYWOOD PANEL SIGNBOARD
50x100mm (2"x4") BRACE
20mm (3/4") BOLTS
438mm 17"
781mm 31"
50x100mm (2"x4") BRACE-OPTIONAL
1
1,2 4
SIDE VIEW
PROJECT IDENTIFICATION SIGNBOARD
SCALE: NONE
SUPPORT DETAILS
PLATE 3 OF 7


100x100mm (4"x4") PRESSURE TREATED POST; COLOR, 'WHITE', 4 SIDES
10 PENNY GALVANIZED FINISHING NAILS AT 200mm (8") O.C. VERTICALLY
M.D.O. PLYWOOD PANEL SIGNBOARD
25mm (1") DEEP ROUTED GROOVE, 19mm (3/4") WIDE
LINE OF 100x100mm (4"x4") ABOVE
100x100mm (4"x4") PRESSURE TREATED POST; COLOR, 'BLUE 1', 4 SIDES
A 1,2 4
PLAN SECTION
SCALE: NONE
100x100mm (4"x4") PRESSURE TREATED POST; COLOR, BLUE, 4 SIDES
25mm (1") DEEP ROUTED GROOVE 19mm (3/4") WIDE
10 PENNY GALVANIZED FINISHING NAILS AT 200mm (8") O.C. VER' AND HORIZ
SLOPE CUT POST, 45 DEGREES
M.D.O. PLYWOOD PANEL SIGNBOARD
100x100mm (4"x4") POST BEYOND
1 1,2 4
DETAIL AT END
SCALE: NONE
PROJECT IDENTIFICATION SIGNBOARD SECTIONS
PLATE 4 OF 7

SECTION 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2002) Portable Fire Extinguishers
NFPA 51B	(2003) Fire Prevention During Welding, Cutting, and Other Hot Work

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety – Safety and Health Requirements

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are Contractor QC approval. The following shall be submitted in accordance with Section 01330:

SUBMITTAL PROCEDURES

Government acceptance is required for submittals with a "G, A" designation.

1.2.1 SD-01 Preconstruction Submittals

Site Health and Safety Plan (shall be included as part of the RAWP submittal; also see Section 1110)

Accident Prevention Plan (APP); G, A

Activity Hazard Analysis (AHA); G, A

1.2.2 SD-06 Reports

Accident Reports

Regulatory Citations and Violations

1.2.3 SD-07 Certificates

Hot work permit

Contractor Safety Self-Evaluation Checklist; G, A

Submit one copy of each permit/certificate attached to each Daily QC Report.

1.3 DEFINITIONS

a. Competent Person for Fall Protection. A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.

b. High Visibility Accident. Any mishap that may generate publicity and/or high visibility.

c. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

d. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator$_4$ riggers and crane walkers, rigging gear between the hook and the load, and the load and the crane's supporting structure (ground, rail, etc.).

e. Qualified Person for Fall Protection. A person with a recognized degree or professional certificate, and with extensive knowledge, training, and experience in the field of fall protection; and who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.

f. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

(1) Death, regardless of the time between the injury and death, or the length of the

illness;

(2) Days away from work (any time lost after day of injury/illness onset);

(3) Restricted work;

(4) Transfer to another job;

(5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. The checklist will be completed monthly by the Contractor and submitted with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90 will result in a retention of up to 10 percent of the voucher.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and the federal, state, and local laws, ordinances, criteria, rules, and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The SSHO shall meet the following requirements:

a. A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects.

b. 30-hour OSHA construction safety class or equivalent within the last 5 years.

c. An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following area of competency:

1.6.2 SSHO/Superintendent

a. Conduct daily safety and health inspections and maintain a written log, which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, and estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' Daily QC Report.

b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and daily production reports for prime and sub-contractors.

c. Maintain applicable safety reference material on the job site.

d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

e. Implement and enforce accepted Accident Prevention Plans (APP) and Activity Hazard Analyses (AHA).

f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.

g. Ensure subcontractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, SSHO, QC supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the AHAs) and special plans, program and procedures associated with it).

b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures, and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference, and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will

require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and resubmit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a pre-construction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6.3.2 Safety Meetings

Shall be conducted and documented as required by USACE EM 385-1-1. Minutes showing contract title, signatures of attendees, and a list of topics discussed shall be attached to the Contractors' daily quality control report.

1.7 ACCIDENT PREVENTION PLAN

The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan." Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated SSHO, and any designated Certified Safety Professional (CSP) and/or Certified Industrial Hygienist (CIH).

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO, and QC manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ANSI/ASSE A10.34), and the environment.

Copies of the accepted plan will be maintained at the Contracting Officer's and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.7.1 USACE EM 385-1-1 Contents

In addition to the requirements outlines in Appendix A of USACE EM 38S-1-1, the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be used such as CSPs, CIHs, STS5, CHST5. The duties of each position shall be specified.

b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

c. Confined Space Entry Plan. Develop a confined space entry plan in accordance with USACE EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site-specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 meters (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. The accepted FP&P Plan shall be kept and maintained at the job site for the duration of the project. The FP&P Plan shall be included in the APP.

1.8 ACTIVITY HAZARD ANALYSIS (AHA)

The AHA format shall be in accordance with USACE EM 385-1-1. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed monthly at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The AHA shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the Contractor, supplier, or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.9 DISPLAY OF SAFETY INFORMATION

Within 3 calendar days after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by USACE EM 385-1-1, Section 01.A.06. Additional items required to be posted include:

a. Hot work permit.

1.10 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.12 REPORTS

1.12.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least $2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the Navy Contractor Significant Incident Report (CSIR) form, and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

b. For any weight handling equipment accident (including rigging gear accidents) the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer. The Contracting Officer will provide a blank copy of the accident report form.

1.12.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than $2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on site and Government investigation is conducted.

1.12.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.12.4 Certificate of Compliance

The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable; for example, cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 Section 16 and Appendix H). Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. The Contractor shall also certify that all of its crane operators working on the DOD activity have been trained in the proper use of all safety devices (such as anti-two block devices). These certifications shall be posted on the crane.

1.13 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Naval Weapons Station Seal Beach Detachment Concord Fire Department. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work." All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Department phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE NWSSBD CONCORD FIRE DEPARTMENT IMMEDIATELY.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, federal and/or state OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

3.1.1 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources), as well as materials that contain asbestos, mercury or polychlorinated biphenyls (PCB), di-

isocynates, and lead-based paint, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.3 Unforeseen Hazardous Material

If unforeseen hazardous material is discovered and may be hazardous to human health upon disturbance during construction operations, stop that portion of work and notify the Contracting Officer immediately. Within seven (7) calendar days the Government will determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage, and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a FP&P program, for the protection of all employees exposed to fall hazards. The program shall include company policy and identify responsibilities, education and training requirements, fall hazards, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment, and rescue and evacuation procedures.

3.3.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, Section 21.A.l6.

3.4 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like are extremely difficult to identify because of the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments, in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.5 ELECTRICAL

3.5.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.5.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

END OF SECTION

SECTION 01575 TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	OSHA Standards
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

CALIFORNIA CODE OF REGULATIONS (CCR)

CCR Title 22, Division 4.5, Chapter 11, Identification and Listing of Hazardous Waste

1.2 CONTRACTOR LIABILITIES FOR ENVIRONMENTAL PROTECTION

Contractors shall complete and provide documentation of environmental training for training required by federal, state, and local regulations.

1.3 DEFINITIONS

1.3.1 Sediment

Soil and other debris that has eroded and has been transported by runoff water or wind.

1.3.2 Solid Waste

Rubbish, debris, garbage, and other discarded solid materials, except hazardous waste as defined in Paragraph 1.3.7, Hazardous Waste, resulting from industrial, commercial, and agricultural operations and from community activities.

1.3.3 Sanitary Wastes

Wastes characterized as domestic sanitary sewage.

1.3.4 Rubbish

Combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

1.3.5 Debris

Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.

1.3.6 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.3.7 Hazardous Waste

Hazardous substances as defined in 40 CFR 261 or as defined by CCR Title 22.

1.3.8 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172 and listed CCR Title 22.

1.3.9 Oily Waste

Petroleum products and bituminous materials.

1.4 SUBMITTALS

Submit the following in accordance with Section 01330, Submittal Procedures.

1.4.1 SD-01, Preconstruction Submittals

a. Environmental Protection Plan (shall be included as part of the RAWP submittal; also see Section 1110); G

b. Completed Construction Stormwater Pollution Prevention Plan (shall be included as part of the RAWP submittal; see Section 1110); G

c. Site Health and Safety Plan (shall be included as part of the RAWP submittal; see Section 1110). Site Health and Safety Plan shall also comply with the requirements contained in the Contractor's basic contract.

1.4.2 SD-07, Certificates

a. Solid waste disposal permit/manifests; G

b. Disposal permit/manifests for hazardous waste; G

c. Erosion and Sediment Control Inspection Reports; G

Submit to the Contracting Officer once every 7 calendar days and within 24 hours of a storm event that produces 0.5 inch of rain or greater.

1.5 ENVIRONMENTAL PROTECTION REGULATORY REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined in this section. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with federal, state, and local regulations pertaining to the environment, including but not limited to water, air, solid waste, and noise pollution.

1.6 ENVIRONMENTAL PROTECTION PLAN

Environmental Protection Plan shall be submitted as a part of the RAWP and shall comply with the following minimum requirements:

1.6.1 Contents of Environmental Protection Plan

a. Any hazardous materials planned for use on the station shall be included in the station Hazardous Materials Tracking Program maintained by the Safety Department. To assist this effort, the Contractor shall submit a list (including quantities) of hazardous materials to be brought to the station and copies of the corresponding MSDS. Submit this list to the Contracting Officer. At project completion, remove any hazardous material brought onto the station. Account for the quantity of hazardous materials brought to the station, the quantity used or expended during the job, and the leftover quantity that (1) may have additional useful life as a hazardous materials and shall be removed by the Contractor, or (2) may be a hazardous waste, which shall then be removed as specified herein.

b. The Environmental Protection Plan shall list and quantify any Hazardous Waste to be generated during the project.

c. In accordance with station regulations, store hazardous waste near the point of generation up to a total quantity of one quart of toxic waste or 55 gallons of hazardous waste. Move any volume that exceeds these quantities to a hazardous waste-permitted area within 3 days. Prior to generation of hazardous wastes, contact the Contracting Officer for labeling requirements for storage of hazardous wastes.

d. In accordance with station regulations, substitute materials as necessary to reduce the generation of hazardous wastes and include a statement to that effect in the Environmental Protection Plan.

e. Contact Contracting Officer for conditions in the area of the project that may be subject to special environmental procedures. Describe in the Environmental Protection Plan any permits required prior to working in the area, and contingency plans in case an unexpected environmental condition is discovered.

f. Obtain permits for handling hazardous waste, and deliver completed documents to Contracting Officer for review. File the documents with the appropriate agency, and complete disposal with the approval of the Contracting Officer. Deliver correspondence with the state concerning the environmental permits and completed permits to Contracting Officer.

1.6.2 Preconstruction Site Inspection

Perform a preconstruction inspection of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources outside the limits of permanent work. Confine construction activities to within the limits of the work indicated or specified. Do not disturb any wetland area beyond the toe of the existing landfill.

3.1.1 Water Resources

Prevent oily or other hazardous substances from entering the ground, drainage areas, wetlands, or local bodies of water. Surround all temporary fuel oil or petroleum storage tanks with a temporary earthen berm of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage.

3.1.2 Fish and Wildlife Resources

Do not unnecessarily disturb fish or wildlife. Do not alter water flows or otherwise disturb the native habitat adjacent to the project, except as indicated or specified.

3.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work. The Government retains ownership and control over historical and archaeological resources.

3.3 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Contracting Officer, and then only during designated times.

3.4 EROSION AND SEDIMENT CONTROL MEASURES

3.4.1 Burnoff

Burnoff of the ground cover is not permitted.

3.4.2 Protection of Erodible Soils

Plan and conduct earthwork to minimize the duration of exposure of unprotected soils in accordance with the approved Stormwater Pollution Prevention Plan.

3.4.3 Temporary Protection of Erodible Soils

Mechanically retard and control the rate of runoff in areas where erosion is observed during construction. Controls include construction of diversion ditches, benches, berms, and use of silt fences and strawbales to retard and divert runoff to protected drainage courses.

3.5 CONTROL AND DISPOSAL OF CONTRACTOR-GENERATED SOLID WASTES

Pick up solid wastes and place them in covered containers that are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean.

3.5.1 Disposal of Rubbish and Debris

Dispose of rubbish and debris in accordance with the requirements specified below:

3.5.1.1 Removal From Government Property

Remove and dispose of rubbish and debris from Government property.

3.5.2 Garbage Disposal

Place garbage in approved containers, and move to a pickup point or disposal area, where directed.

3.6 CONTROL AND DISPOSAL OF HAZARDOUS WASTE

3.6.1 Hazardous Waste Generation

Handle generated hazardous waste in accordance with 40 CFR 262.

3.6.2 Hazardous Waste Disposal

Dispose of hazardous waste in accordance with federal, state, and local regulations, especially 40 CFR 263, 40 CFR 264, 40 CFR 265, and CCR Title 22, Division 4.5, Chapter 11. Removal of hazardous waste from Government property shall not occur without prior notification and

coordination with the Contracting Officer. Transport hazardous waste by a permitted, licensed, or registered hazardous waste transporter to a treatment, storage, and disposal (TSD) facility. Hazardous waste shall be properly identified, packaged, and labeled in accordance with 49 CFR 172. Provide completed manifests for hazardous waste disposed of off site to the Contracting Officer within 7 days of disposal. Hazardous waste shall not be brought onto the base.

3.6.3 Hazardous Waste Storage

Store hazardous waste in containers in accordance with 49 CFR 178. Identify hazardous waste in accordance with 40 CFR 261 and 40 CFR 262. Identify hazardous waste generated within the confines of the station by the station's EPA generator identification number.

3.6.4 Spills of Oil and Hazardous Materials

Take precautions to prevent spills of oil and hazardous material. In the event of a spill, immediately notify the Contracting Officer. Spill response shall be in accordance with 40 CFR 300 and applicable state regulations.

3.6.5 Petroleum Products

Protect against spills and evaporation during fueling and lubrication of equipment and motor vehicles. Properly dispose of lubricants and excess oil.

3.7 DUST CONTROL

Control dust at all times, including during nonworking periods. Sprinkle or treat, with approved dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. If street sweepers are used, brooms shall not be wire.

3.8 METHANE GAS

Take precautions to avoid all ignition sources on the site during construction due to potentially explosive concentrations of methane gas.

3.9 WATER GENERATED DURING CONSTRUCTION

Standing surface water initially retained behind the tide control levee installed by the Contractor shall be pumped over the levee prior to any other construction until the standing water is removed sufficiently for construction. After initiating construction, any water seeping through or under the levee may be pumped over the levee as long as it has not contacted waste or potentially contaminated soils.

Water generated by dewatering areas below the ground surface or any other water that may have contacted waste or contaminated soil shall not be discharged from the site. This water will be collected, stored, and used for moisture conditioning of the foundation layer or for dust control within the footprint of the landfill, prior to installation of the geosynthetic layers. This water shall not be used for moisture conditioning of any fill layers above the geosythetic layers, including general fill, vegetative cover soil, or wetland compatible soil. Water that is not used for dust control or moisture conditioning shall be containerized, analyzed for chemicals, and subsequently disposed of at an appropriate facility based on chemical characterization.

END OF SECTION

SECTION 02220 SITE DEMOLITION

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Remove rubbish and debris resulting from construction activities from the project site; do not allow accumulations. Store materials that cannot be removed daily in areas specified by the Contracting Officer. Existing fill materials at the site are to be incorporated into the foundation grading shown in the Drawings. Oversize material or highly compressible material shall be removed from the site for off-site disposal or shall be pulverized, chipped, or shredded as necessary for disposal within the landfill waste.

1.2 SUBMITTALS

None required

1.3 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, flooding or pollution.

1.4 PROTECTION

Protect existing features that are to remain in place. Repair items that are to remain and that are damaged during performance of the work to their original condition, or replace with new.

1.5 BURNING

Burning will not be permitted.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 REFUSE DISPOSAL

All refuse generated by construction will be controlled such that it is not carried off site by wind or water and does not constitute a hazard to worker safety or construction equipment. Refuse may be collected in construction dumpsters contracted through a local municipal waste hauler.

Remove and transport refuse in a manner that will prevent spillage on pavements, streets, or adjacent areas. Clean up spillage from pavements, streets, and adjacent areas to prevent potential damage by foreign objects.

3.2 CLEARING AND GRUBBING

Clearing and grabbing activities were completed during 2006. Future playing and grabbing activities are not required. New bill may be placed directly on the surface of the landfill. There is no future requirement for stripping, clearing, or grabbing.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

ASTM INTERNATIONAL

ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2000) Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)
ASTM D 2216	(1998) Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 2487	(2000) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2488	(2000) Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1996) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 3385	(2003) Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer
ASTM D 4318	(2000) Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

SOIL SCIENCE SOCIETY OF AMERICA

SSSA and ASA	A. Klute, editor. Number 5 in the Soil Science Society of America Book Series. *"Methods of Soil Analysis: Part 1-Physical and Mineralogical Methods."* 1986.

EPA

SW-846	(May 1997) Test Methods for Evaluating Solid Waste

1.2 DEFINITIONS

1.2.1 Solid Waste

Rubbish, debris, garbage, and other discarded solid non-inert materials resulting from industrial, commercial, and agricultural operations and from community activities.

1.2.2 Foundation Layer

The foundation layer consists of a 2-foot-thick layer of compacted imported soil. The foundation layer supports the geosynthetic layers indicated on the project plans.

1.2.3 Low-Permeability Geomembrane, Geotextile Filter Fabric, and Geonet Layers

The low-permeability geomembrane is a 40-mil linear low density polyethylene (LLDPE) liner that forms a hydraulic barrier in the landfill cap. The LLDPE liner is constructed on the foundation layer and rests upon a 12-ounce nonwoven geotextile filter fabric. The LLDPE liner is covered with a geonet drainage/biotic barrier layer. The geonet is covered with an 8-ounce nonwoven geotextile filter fabric. The geotextile filter fabric is specified in Section 02373, the geonet drainage layer is specified in Section 02621, and the geomembrane liner is specified in Section 02700.

1.2.4 Topsoil

The top layer of the cover (vegetative layer) shall consist of soil that is capable of supporting plant growth. The topsoil cover shall have a minimum compacted thickness of 12 inches.

1.2.5 Wetland Compatible Soil

Wetland compatible soil shall be placed at the toe of the landfill as shown on the drawings in order to assist the establishment of wetland-type plants.

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, Submittal Procedures.

1.3.1 SD-06 Field Test Reports

a. Soil cover and foundation layer imported material tests

b. Soil cover and foundation layer imported material metals content

See Table 4 for testing frequency and type. Submit raw data as available and summarize weekly.

1.3.2 SD-07 Certificates

a. Imported soil quality, ensuring no contamination and verifying geotechnical properties

b. California Registered Civil Engineer or Geologist certification

1.3.3 SD-09 Manufacturer's Test Reports

a. Top soil analysis; G

The results of the top soil analysis and laboratory's recommendations for plant growth shall be supplied.

1.3.4 SD-11 Closeout Submittals

a. Final soil cover survey with As-Built Drawings

b. Survey information on permanent local site monuments

1.4 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

PART 2 PRODUCTS

2.1 FOUNDATION LAYER MATERIAL

Foundation layer material shall consist of imported soil. Imported material used for foundation layer shall be from a clean source and shall be analyzed to confirm the clean nature of the materials. Imported material shall conform to the specifications of Paragraphs 2.2.1 of this section and Tables 2 and 3 based on analyses using the EPA SW-846 indicated.

2.2 TOPSOIL

Natural, clean, friable soil representative of productive, well-drained soils. Topsoil shall be free of sub-soil, stumps, rock larger than 2 inches in diameter, brush, weeds, toxic substances, and other material detrimental to plant growth.

The soil shall be from a clean source and shall be analyzed to confirm the clean nature of the materials. The soil shall not contain metals above the higher of Tidal Area ambient levels for metals or the Water Board sediment screening criteria (Water Board 2000) listed in Table 2 using EPA SW-846.

Organic contamination shall be assessed using EPA Test Method 8260B for volatile organic compounds (VOC), EPA Test Method 8270C for semivolatile organic compounds (SVOC), and EPA Test Method 8081A and 8082 for pesticides and PCBs. Organic compounds shall not exceed the higher of the specified EPA analytical test method detection limits or Water Board sediment screening criteria (Water Board 2000). The sediment screening criteria for various organic compounds are provided in Table 3.

2.3 WETLAND COMPATIBLE SOIL

Soil to be placed in designated wetland compatible soil areas shall meet or be amended as required to meet the requirements of Section 2300 above and:

- Wetland compatible soil shall consist of silty or clayey sands, clay with sand, silt with sand, clay, or silt. Wetland compatible soil shall have less than 70% sand (passing the 200 sieve).
- pH = 5.0 to 8.0
- Cation exchange capacity = > 15 milli-equivalent per 100 grams
- Organic matter = >5%
- Ca, Mg, Na, = Sodium Absorption Ratio (SAR) <12
- K = > 200 ppm
- Percent base saturation greater than 50%
- Kjeldahl nitrogen (total nitrogen) = 2% (20,000 ppm)
- Nitrate-nitrogen = 50 to 100 ppm
- Total P and available P = highly variable based on extraction method (maybe >20 ppm)

See Table 1 for the required analytical methods for determining the soil properties above.

The soil shall be from a clean source and shall be analyzed to confirm the clean nature of the materials. Soil shall not contain metals above the higher of Tidal Area background concentrations for metals or the Water Board sediment screening criteria (Water Board 2000) listed in Table 2 using EPA SW-846.

Organic contamination shall be assessed using EPA Test Method 8260B for VOCs, EPA Test Method 8270C for SVOCs, and EPA Test Method 8081A and 8082 for pesticides and PCBs. Organic compounds shall not exceed the higher of the specified EPA analytical test method

detection limits or Water Board sediment screening criteria (Water Board 2000). The sediment screening criteria for various organic compounds are provided in Table 3.

2.4 GENERAL FILL

General fill shall consist of natural, clean, well-drained soils capable of being compacted to at least the same compaction standard as required for the overlying soil. General fill shall be free of sub-soil, stumps, rock larger than 6 inches in diameter, brush, weeds, toxic substances, and other harmful material.

If installed in areas outside of the landfill, the soil shall be from a clean source and shall be analyzed to confirm the clean nature of the materials. The soil shall not contain metals above the higher of Tidal Area background concentrations for metals or the Water Board sediment screening criteria (Water Board 2000) listed in Table 2 using EPA SW-846.

Organic contamination shall be assessed using EPA Test Method 8260B for VOCs, EPA Test Method 8270C for SVOCs, and EPA Test Method 8081A and 8082 for pesticides and PCBs. Organic compounds shall not exceed the higher of the specified EPA analytical test method detection limits or Water Board sediment screening criteria (Water Board 2000). The sediment screening criteria for various organic compounds are provided in Table 3.

PART 3 EXECUTION

3.1 SCHEDULE

Contractor shall schedule earthwork such that hydroseeding and wetland planting occurs in the months specified (see Section 02922, Landscaping, Part 3.1.1). Contractor is responsible for maintaining completed work and environmental controls (see Section 01575, Temporary Environmental Controls) at all times, including gaps in construction activity.

All mass grading at the site shall be conducted exclusively during the dry season from April 15 to October 1. If unavoidable delays require earthwork following the dry season, an erosion and sedimentation control program plan shall be prepared and submitted no later than August 15. The erosion and sedimentation control plan shall detail erosion control measures to minimize erosion during the rainy season.

3.2 STORMWATER BEST MANAGEMENT PRACTICES

During initial site preparation and throughout construction, maintain stormwater best management practices specified in approved Stormwater Pollution Prevention Plan to minimize the transport of silt into the Tidal Area.

3.3 PROTECTION

3.3.1 Drainage and Dewatering

Provide for the collection and reuse or disposal of potentially contaminated surface and subsurface water encountered during construction.

3.3.1.1 Drainage

So that construction operations progress successfully, drain the site during periods of construction to keep soil materials sufficiently dry. The Contractor shall establish storm drainage features at the earliest stages of site development. Throughout construction, grade the construction area to provide positive surface water runoff away from the construction activity or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. The Contractor is responsible for assessing the conditions of soil and groundwater presented by the design and to employ necessary measures to permit construction to proceed.

3.3.1.2 Dewatering

Groundwater or surface water infiltration of the perimeter of the landfill may occur during construction. Contractor shall establish a dewatering system to enable work at the landfill boundary. Any groundwater or surface water flowing into dewatered areas shall be controlled to create conditions conducive to the placement of fill as required by the contract.

Water generated by dewatering areas adjacent to the landfill or any other water that may have contacted waste or contaminated soil shall not be discharged from the site. This water will be collected, stored, and used for moisture conditioning of the foundation layer or for dust control within the footprint of the landfill prior to installation of the geosynthetic layers. This water shall not be used for moisture conditioning of any layer located above the geosynthetic layers, including the 12-inch general fill or 6-inch vegetative cover soil layers or wetland compatible soil. Water that is not used for dust control or moisture conditioning shall be containerized, analyzed for chemicals, and subsequently disposed of at an appropriate facility based on chemical characterization.

3.4 WASTE EXCAVATION

Excavation below existing grades at the landfill is strictly prohibited during the execution of this contract.

3.5 GENERAL FILL AND FOUNDATION LAYER

General fill and the foundation layer shall be constructed by importing fill to the elevations and slopes indicated on the Drawings. The first foot of fill (14 inches loose lift thickness) placed shall be spread and compacted in a 1-foot thick loose lift so as to reduce the pressure of compaction on the underlying existing soils which may contain munitions or explosives of concern. General fill shall be compacted to at least 85 percent of the Modified Proctor maximum density at ± 3 percent optimum moisture content. The top 2 feet of the foundation layer shall be compacted in 8-inch-thick loose lifts or 6-inch compacted lifts to at least 90 percent of Modified Proctor maximum density at ± 3 percent optimum moisture content. The foundation layer will be inspected immediately prior to placing the geosynthetic layers to ensure that there are no sharp objects or rocks larger than 0.5 inch protruding at the surface that may damage the liner.

3.6 GEOSYNTHETIC LAYERS

The foundation layer will be covered with a 12-ounce geotextile filer fabric and LLDPE geomembrane liner. The geomembrane will be covered with a geonet drainage/biotic barrier layer and an 8-ounce geotextile filter fabric. The 8-ounce and 12-ounce geotextile filter fabrics are specified in Section 02373, the geonet drainage layer is specified in Section 02621, and the gemembrane is specified in Section 02700. The placement of these layers is also illustrated on the project drawings.

3.7 TOPSOIL AND WETLAND COMPATIBLE SOIL

Topsoil and the wetland compatible soil shall be compacted to at least 83 percent of the Modified Proctor maximum density at ± 3 percent optimum moisture content.

3.8 FINISHING OPERATIONS

3.8.1 Grading

Finish grades as indicated within plus or minus one tenth of one (0.1) foot. Grade smooth existing surfaces that are to remain but have been disturbed by the Contractor's operations. Grid spacing shall be 50 feet by 50 feet or smaller for survey verification of thickness and grade. Survey elevations shall be verified immediately before placement of overlying layers to ensure that excessive settlement has not occurred.

3.8.2 Topsoil

Provide topsoil in all areas to be seeded and wetland compatible soil in all areas to be planted. Topsoil shall be graded to the slopes shown on the Drawings. Amend topsoil as required to meet the requirements of Table 1.

3.8.2.1 Topsoil Test

A soil test shall be performed for every acre of applied topsoil or wetland compatible soil and for any new source of either soil. The soil test shall be performed to assess the suitability of soil to support the plant species listed in Section 02922, Landscaping, and identify type and quantity of soil amendments. The soil test laboratory shall be located in California and shall analyze soils according to University of California soil testing procedures, American Society of Agronomy chemical and microbiological analyses, or the equivalent.

Soils shall be tested for the following constituents:

Nitrate-Nitrogen	Calcium	Sodium Adsorption Ratio
Phosphorus	Magnesium	Boron
Potassium	Sodium	Chloride
Sulfate	Zinc	Manganese
Iron	Copper	Cation Exchange Capacity
Percent Base Saturation	Limestone	Lime Requirement
pH	Salinity	Organic Matter
Gypsum Requirement		

The soil test laboratory shall recommend type and application rate of soil amendments based on soil test results.

3.8.3 Hydroseed and Wetland Planting

Provide as specified in Section 02922, Landscaping.

3.8.4 Protection of Surfaces

Protect newly graded areas from traffic, erosion (see Section 01575, Temporary Environmental Controls), and settlement that may occur. Repair or reestablish damaged grades, elevations, or slopes. Erosion matting shall be installed in all swales and concentrated flow paths unless riprap is installed. Six inches of rock riprap shall be installed in swales, with a slope greater than 1.5 percent. The riprap shall be underlain by a 12-ounce nonwoven geotextile.

3.9 DISPOSAL OF SURPLUS MATERIAL

All organic debris shall be disposed of in the landfill as indicated in Section 2220.

Contractor shall minimize the generation of waste, inorganic trash, or debris whenever possible, recycle as much material as possible, and use local waste recovery sites available in the area.

Inorganic debris currently screened for the presence of UXO and stockpiled at the site may be placed within the layer of imported general fill. No additional waste or debris shall be excavated from the landfill and no debris shall be placed directly on the existing landfill surface. Stockpiled waste that is confirmed clear of UXO, may be deposited upon the first foot of general fill after that layer of general fill has been compacted. If oversized fill (concrete, wood, steel, or other debris) cannot be placed as fill because of noncompliance with this specification, it shall be shredded or otherwise broken down to allow placement of the material. If placement of UXO-cleared debris is not practical, oversized material may be disposed of off site with the written permission of the Contracting Officer.

3.10 FIELD QUALITY CONTROL

3.10.1 Sampling

Collect the number and size of samples required to perform the specified tests of source materials.

3.10.2 Source Testing

Determine laboratory compaction characteristics and soil classification for soil cover and topsoil materials used. Provide additional tests for every source change. See Table 4.

Sample all materials for the soil cover and topsoil layers once per source. Collect samples according to laboratory instruction. The laboratory shall analyze samples according to EPA SW-846.

3.10.3 Field Density Tests

See Tables 3 and 4. If a test location fails, the surrounding area shall be reworked up to at least half the distance to all nearby test locations that passed. Then, a new location within 10 feet of the previous test location shall be retested. Repeat until test location area passes.

Nuclear gauge results (ASTM D 2922 and D 3017) shall be compared with and calibrated to oven-dried water content (ASTM D 2216) and sand cone (ASTM D 1556) tests according to the larger of the frequencies of the oven-dried water content and sand cone tests.

3.11 FINAL CAP SURVEY

Perform a final survey of the cap at IR Site 1 once construction is complete. Include the final survey information with the as-built drawings.

3.11.1 Permanent Local Monuments

Install two permanent monuments (settlement markers) on the final cap. Establish the monuments using the existing mapping control points shown on the drawings.

TABLE 1
Analytical Methods for Determining Wetland Soil and Top Soil Properties

Analysis Package	Analyte	Method
Complete Agronomic	pH (saturated paste)	SSSA 1986, Method 10.3.1
	Organic matter %	SSSA 1986Method 29-3.5.2
	Nitrate-nitrogen	SSSA 1986Method 33-8.1
	Available phosphorus (Olsen or Bray)	SSSA 1986Method 24-5.4 SSSA 1986Method 24-5.1
	Potassium (ammonium acetate extractable)	SSSA 1986Method 13-3.5
	Sodium	SSSA 1986Method 13-4
	Sulfate	SSSA 1986Method 10-3.7
	Lime requirement	SSSA 1986Method 12-3
	Electrical conductivity	SSSA 1986Method 10-3.3
	Texture	SSSA 1986 Method 15-5

Note:

SSSA Soil Science Society of America A. Klute, editor. Number 5 in the Soil Science Society of America Book Series. *Methods of Soil Analysis: Part 1-Physical and Mineralogical Methods.* 1986.

TABLE 2
Concentration Limits on Metals for
Imported Foundation, Soil Cover, and Topsoil Layers

Metal	Tidal Area Ambient Concentration (mg/kg)	RWQCB Wetland Cover Criteria (mg/kg)	Clean Imported Fill Maximum Concentration (mg/kg)
Aluminum	**2.7×10^{4}**	None Available	**2.7×10^{4}**
Antimony	**1.9×10^{0}**	None Available	**1.9×10^{0}**
Arsenic	**2.6×10^{1}**	1.53×10^{1}	**2.6×10^{1}**
Barium	**4.2×10^{2}**	None Available	**4.2×10^{2}**
Beryllium	**1.3×10^{-1}**	None Available	**1.3×10^{-1}**
Cadmium	**5.5×10^{-1}**	3.3×10^{-1}	**5.5×10^{-1}**
Chromium (total)	8.1×10^{1}	**1.12×10^{2}**	**1.12×10^{2}**
Cobalt	**2.4×10^{1}**	None Available	**2.4×10^{1}**
Copper	**7.3×10^{1}**	6.8×10^{1}	**7.3×10^{1}**
Lead	**7.0×10^{1}**	4.3×10^{1}	**7.0×10^{1}**
Manganese	**1.2×10^{3}**	None Available	**1.2 x 103**
Mercury	2.5×10^{-1}	**4.3 x 10-1**	**4.3 x 10-1**
Molybdenum	**6.2×10^{0}**	None Available	**6.2×10^{0}**
Nickel	1.10×10^{2}	**1.12×10^{2}**	**1.12×10^{2}**
Selenium	Detection Limit	**6.4×10^{-1}**	**6.4×10^{-1}**
Silver	Detection Limit	**5.8×10^{-1}**	**5.8×10^{-1}**
Thallium	**1.8×10^{0}**	None Available	**1.8×10^{0}**
Vanadium	**9.1×10^{1}**	None Available	**9.1×10^{1}**
Zinc	**2.10×10^{2}**	1.58×10^{2}	**2.1×10^{2}**

Notes:

EPA U.S. Environmental Protection Agency
mg/kg Milligrams per kilogram
Water Board San Francisco Bay Regional Water Quality Control Board

Source: Water Board sediment screening criteria (Water Board 2000).

TABLE 3
Concentration Limits on Organic Compounds for Imported Foundation, Soil Cover, and Topsoil Layers

Analyte	Wetland Creation Cover Concentration (µg/kg)
ORGANOCHLORINE PESTICIDES/PCBS	
DDTS, sum	7.0
Chlordanes, sum	2.3
Dieldrin	0.72
Hexachlorocyclohexane, sum	0.78
Hexachlorobenzene	0.485
PCBs, sum	22.7
POLYCYCLIC AROMATIC HYDROCARBONS	
PAHs, total	3,390
Low molecular weight PAHs, sum	434
High molecular weight PAHs, sum	3,060
1-Methylnaphthalene	12.1
1-Methylphenanthrene	31.7
2,3,5-Trimethylnaphthalene	9.8
2,6-Dimethylnaphthalene	12.1
2-Methylnaphthalene	19.4
Acenaphthene	26.0
Acenaphthylene	88.0
Anthracene	88.0
Benz(a)anthracene	412
Benzo(a)pyrene	371
Benzo(e)pyrene	294
Benzo(b)fluoranthene	371
Benzo(g,h,i)perylene	310
Benzo(k)fluoranthene	258
Biphenyl	12.9
Chrysene	289
Dibenz(a,h)anthracene	32.7
Fluoranthene	514
Fluorene	25.3
Indeno(1,2,3-c,d)pyrene	382
Naphthalene	55.8
Perylene	145
Phenanthrene	237
Pyrene	665

Note: The maximum permissible concentration of organic compounds is the higher of the analytical test method detection limit and the wetland creation cover criteria listed above.

µg/kg Microgram per kilogram

TABLE 4
Foundation Layer and Soil Cover Testing
Requirements and Frequency

Test	ASTM Method	Frequency	Required Minimum Criteria
Density & Moisture	Nuclear gauge D2922 and D3017	One per 10,000 sf	See Table 5
Density	Sand Cone D1556	One per 200,000 sf	See Table 5
Moisture	Oven D2216 (with cor. to Nuclear gauge D2922)	One per 100,000 sf (minimum one per day)	Based on compaction curves
Compaction Curves	Mod. Proctor D1557	Every 5,000 cy or once/week	n/a
Atterburg Limits	D 4318	Every 5,000 cy or once/week	n/a
Identification of Soils	D 2487	One per change in material	GW, GP, GM, SW, SP, SM (bottom 6" per manufacturer's recommendation)

Notes:

cy	Cubic yard
GW	Well-graded gravel per Unified Soil Classification System
GP	Poorly graded gravel per Unified Soil Classification System
GM	Silty gravel per Unified Soil Classification System
SW	Well-graded sand per Unified Soil Classification System
sf	Square foot
SP	Poorly graded sand per Unified Soil Classification System
SM	Silty sand per Unified Soil Classification System

TABLE 5
Foundation Layer and Soil Cover Compaction

Fill Type	Maximum Loose Lift Thickness	Moisture Content	Minimum Density	Method of Test
First Foot of General Fill	14 inches	± 3% of optimum	85% min	ASTM D1557
Subsequent Layers of General Fill	8 inches	± 3% of optimum	90% min	ASTM D1557
Foundation Layer	8 inches	± 3% of optimum	90% min	ASTM D1557
General Fill over Geomembrane	14 inches	± 3% of optimum	85% min	ASTM D1557
Top Soil	NA	± 3% of optimum	85% max	ASTM D1557

END OF SECTION

SECTION 02373 GEOTEXTILE FILTER FABRIC LAYER

PART 1 GENERAL

1.1 SCOPE

Contractor shall furnish all geotextile, labor, incidental materials, tools, supervision, transportation, and installation equipment necessary for the installation of geotextile, as specified herein, and as shown on the drawings.

1.2 REFERENCES

ASTM D 5261,	Standard Test Method for Measuring Mass per Unit Area of Geotextiles
ASTM D 4632,	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
ASTM D 4533,	Standard Test Method for Index Trapezoidal Tearing Strength of Geotextiles
ASTM D 4833,	Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
ASTM D 4491,	Standard Test Method for Water Permeability of Geotextiles by Permittivity
ASTM D 4751,	Standard Test Method for Determining Apparent Opening Size of a Geotextile
ASTM D 4354,	Standard Practice for Sampling of Geosynthetics for Testing
ASTM D 4759,	Standard Practice for Determining the Specifications Conformance of Geosynthetics

1.3 SUBMITTALS

a. SD-03 Product Data

The Contractor shall submit the manufacturer's QC manual for the geotextile to be delivered to the site.

b. SD-07 Certificates

Prior to material delivery to project site, the Contractor shall provide the Contracting Officer with a written certification or manufacturers QC data that displays that the geotextile meets or exceeds minimum average roll values (MARV) specified herein.

PART 2 PRODUCTS

2.1 GEOTEXTILE

a. The non-woven needle-punched geotextile specified herein shall be made from polypropylene staple or continuous fiber.

b. The geotextile shall be manufactured from first quality virgin polymer.

c. The geotextile shall be able to withstand direct exposure to ultraviolet radiation from the sun for up to 15 days without any noticeable effect on index or performance properties.

d. Geotextile shall meet or exceed all material properties listed in Table 1.

TABLE 1
MARV Required for Nonwoven Needlepunched Geotextiles

Tested Property	Test Method	8-Ounce Fabric	12-Ounce Fabric
Mass per Unit Area (oz/yd^2)	ASTM D 5261	8	12
Grab Tensile Strength (lb)	ASTM D 4632	220	320
Grab Elongation (%)	ASTM D 4632	50	50
Puncture Strength (lbs)	ASTM D 4833	120	190
Trapezoidal Tear Strength (lbs)	ASTM D 4533	95	125
Apparent Opening Size (sieve no.)	ASTM D 4751	80	100
Permittivity (sec)	ASTM D 4491	1.50	0.80
Permeability (cm/sec)	ASTM D 4491	0.30	0.29
Water Flow Rate ($gal/min/ft^2$)	ASTM D 4491	110	60
UV Resistance (% retained after 500 hours)	ASTM D 4355	70	70

2.2 MANUFACTURE

All rolls of the geotextile shall be identified with permanent marking on the roll or packaging, with the manufacturer's name and product identification.

2.3 TRANSPORT

a. Transportation of the geotextile shall be the responsibility of the Contractor.

b. During shipment, the geotextile shall be protected from ultraviolet light exposure, precipitation, mud, dirt, dust, puncture, or other damaging or harmful conditions.

c. Upon delivery at the job site, the Contractor shall ensure that the geotextile rolls are handled and stored in accordance with the manufacturer's instructions as to prevent damage.

PART 3 EXECUTION

3.1 QUALITY ASSURANCE

a. The Contractor shall examine the geotextile rolls upon delivery to the site and report any deviations from project specifications to the Contracting Officer.

b. The Contracting Officer may instruct the Contractor to arrange conformance testing of the rolls delivered to the job site. For this purpose, the Contractor shall take a sample 3 feet (along roll length) by roll width according to ASTM Practice D 4354 The sample shall be properly marked, wrapped, and sent to an independent laboratory for conformance testing.

c. The pass or fail of the conformance test results shall be determined according to ASTM Practice D 4759.

3.2 INSTALLATION

a. The geotextile shall be handled in such a manner as to ensure that it is not damaged in any way. Should the Contractor damage the geotextile to the extent that it is no longer usable as determined by these specifications or by the Contracting Officer, the Contractor shall replace the geotextile at his own cost.

b. The geotextile shall be installed to the lines and grades as shown on the contract drawings and as described herein.

c. The geotextile shall be rolled down the slope in such a manner as to continuously keep the geotextile in tension by self weight. The geotextile shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.

d. In the presence of wind, all geotextiles shall be weighted by sandbags or approved equivalent. Such anchors shall be installed during placement and shall remain in place until replaced with cover material.

e. The Contractor shall take necessary precautions to prevent damage to adjacent or underlying materials during placement of the geotextile. Should damage to such material occur due to the fault of the Contractor, the latter shall repair the damaged materials at his own cost and to the satisfaction of the Contracting Officer.

f. During placement of the geotextile, care shall be taken not to entrap soil, stones, or excessive moisture that could hamper subsequent seaming of the geotextile as judged by the Contracting Officer.

g. The geotextile shall not be exposed to precipitation prior to being installed and shall not be exposed to direct sunlight for more than 15 days after installation.

h. The geotextile shall be lapped at least 2 feet at using heat seaming or stitching methods as recommended by the manufacturer and approved by the Contracting Officer. Sewn seams shall be made using polymeric thread with chemical resistance equal to or exceeding that of the geotextile. All sewn seams shall be continuous. Seams shall be oriented down slopes perpendicular to grading contours unless otherwise specified. For heat seaming, fusion welding techniques recommended by the manufacturer shall be used.

i. The Contractor shall not use heavy equipment to traffic above the geotextile without approved protection.

j. The geotextile shall be covered as soon as possible after installation and approval. Installed geotextile shall not be left exposed for more than 15 days.

k. Material overlying the geotextile shall be carefully placed to avoid wrinkling or damage to the geotextile.

END OF SECTION

SECTION 02521 PASSIVE GAS VENTS AND GAS MONITORING PROBES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

ASTM INTERNATIONAL

ASTM D 1785	(1999) Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D 1945	(1996) Test Method for Analysis of Natural Gas by Gas Chromatography
ASTM D 2564	(1996) Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
ASTM D 2855	(1996) Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
ASTM D 5088	(1990) Standard Practice for Decontamination of Field Equipment Used at Nonradioactive Waste Sites
ASTM F 810	(1999) Specification for Smoothwall Polyethylene (PE) Pipe for Use in Drainage and Waste Disposal Absorption Fields
ASTM F 480	(2000) Standard Specification for Thermoplastic Probe Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80

EPA

625/R-96-010b	Number TO-14 VOCs by Canisters and Gas Chromatograph

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01330, Submittal Procedures.

1.2.1 SD-03, Manufacturers Catalogue Data

a. Pipe
b. Fittings
c. Solvent-Cement

1.2.2 SD-06, Field Test Reports

a. Post Construction Methane Tests: Submit test results of methane post construction sampling.

PART 2 PRODUCTS

2.1 GAS MONITORING GAS PROBE AND GAS VENT CASING

2.1.1 Gas Vent Pipe

A 4-inch, solvent welded nominal diameter, schedule 40 polyvinyl chloride (PVC), dimensions and lengths as indicated on Drawings, manufactured to meet the requirements of ASTM F 480. Solvent cement to meet the requirements of ASTM D 2564.

2.1.2 Gas Probe Pipe

A 2-inch nominal diameter schedule 40 PVC, dimensions and lengths as indicated on Drawings, manufactured to meet the requirements of ASTM F 480. Pipe fittings shall be flush-joint threaded with O-ring seals. Provide threaded and gasketed PVC top with a 1/8-inch male pipe thread by 3/16-inch brass stopcock with tubing barb directly into the top of the end cap.

2.2 GAS MONITORING GAS PROBE AND GAS VENT SCREEN

2.2.1 Gas Vent Screen

A 4-inch, solvent welded nominal diameter, schedule 40 PVC, dimensions and lengths as indicated on Drawings, machine slotted 0.020 inches, manufactured to meet the requirements of ASTM F 480. Provide solvent welded PVC bottom end cap.

2.2.2 Gas Probe Screen

A 2-inch diameter, schedule 40 PVC, dimensions and lengths as indicated on Drawings, flush-joint threaded with O-ring seals, machine slotted 0.020 inches, manufactured to meet the requirements of ASTM F 480. Provide flush threaded PVC bottom end cap.

2.3 FILTER PACK

Nominal U.S. Standard sieve size range 8-20 when tested by ASTM C 136.

2.4 BENTONITE SEAL

Pelletized or chipped sodium montmorillanite.

2.5 CEMENT AND BENTONITE GROUT

a. Type I or II Portland cement manufactured to meet the requirements of ASTM C 150.

b. Powered sodium montmorillanite.

c. Grout to be mixed in a ratio of 95 percent by weight cement and 5 percent by weight powdered sodium montmorillanite.

2.6 CONCRETE

A 3,000 pound per square inch (psi) concrete mix. Maximum aggregate size 0.75-inch. Cement in mix shall be Type I, II, or III Portland cement according to ASTM C 150.

2.7 PROTECTIVE COVER (GAS PROBES ONLY)

a. Provide steel or aluminum lockable protective cover set over the probe casing. Paint the casing with a weather-resistant, beige paint.

b. Provide weather-resistant keyed alike padlocks with minimum shackle clearance of 2 inches vertical and 0.75-inch horizontal.

PART 3 EXECUTION

3.1 BOREHOLE DRILLING

a. Drill all boreholes to the approximate depths shown in the Drawings.

b. Drilling augers shall be nominal 6-inch inside diameter and 10- or 12-inch outside diameter to meet the dimensions of the minimum borehole size shown on the drawing.

c. All boreholes (gas probes only) shall be continuously sampled for lithologic logging. The Contractor's field geologist will be responsible for completing a log of the borehole lithology.

d. No drilling fluids shall be added to the borehole.

e. No lubricants shall be used on down-hole drilling equipment other than vegetable-based lubricants on auger flight and drill rod joints.

f. Drill cuttings shall be handled according to the construction sequence. Drill cuttings may be incorporated into the foundation layer or disposed of off site. Otherwise, provide equipment to containerize all drill cuttings displaying visual evidence of contamination. Visibly uncontaminated drill cuttings shall be spread at the borehole location.

3.2 GAS PROBE AND GAS VENT INSTALLATION

a. All annular materials shall be installed to the approximate depths shown on the Drawings. Construct gas probes using 2-inch threaded PVC joints and vents using 4-inch PVC solvent welding according to ASTM D 2855. The Contractor's field geologist may request minor modifications to the installation depths as necessary. Depths to the top of filter pack and cement seal materials shall be directly measured using a weighted tape measure to confirm installation to appropriate depths. Screen and blank casing lengths shall be measured to the nearest 0.01 foot as probe as total installed length.

b. The sand filter pack shall be added by gravity fall from the surface. The cement grout shall be placed in one continuous operation into the annulus above the bentonite seal to the depth shown in the Drawings by use of tremie pipe or grout pump.

c. Protective casings shall be installed on gas probes to protect the monitoring points. Compact concrete to eliminate voids and finish to a slope as specified in the Drawings to divert water runoff away from the probe casing. Gas vent pipe shall be painted above grade.

3.3 DECONTAMINATION

a. Decontamination procedures shall conform to ASTM D 5088.

b. All drill rods, drill bits, augers, tremie pipes, grout pumping lines, and other associated equipment shall be cleaned with a portable, high-pressure steam cleaner prior to drilling at each vent or probe location. Soil sampling equipment such as split spoons shall be washed with detergent solution and rinsed with approved water prior to collecting each soil sample. Provide equipment to capture and containerize all decontamination fluids.

3.4 WASTE DISPOSAL

The Contractor will be responsible for arranging and completing appropriate final disposition of all containerized drill cuttings and decontamination water.

3.5 SURVEYING

a. Provide a California-licensed surveyor or registered Civil Engineer to survey horizontal and vertical coordinates for location (northing and easting), the top of casing (TOC) elevation, and adjacent ground surface elevation for each probe constructed.

b. All northing and easting coordinates shall be based on control points shown on the Drawings. Horizontal coordinates shall be measured within 0.1-foot accuracy.

c. All elevation measurements shall be based upon the elevation of the survey control points shown on the Drawings. All elevation measurements shall be measured within 0.01-foot accuracy. The TOC elevation shall be measured by placing the surveying rod directly on top of the north side of the probe casing. The TOC elevation measuring point shall be marked with a 1/8-inch deep sawcut, but do not puncture PVC casing.

3.6 POST-CONSTRUCTION SAMPLING (GAS PROBES ONLY)

After the completion of gas probe construction, wait a minimum of 48 hours and sample gas in the probe in accordance with EPA 625/R-96-010b Number TO-14 and ASTM D 1945 using SUMMA canisters. Repeat this procedure 48 hours later and report the results in terms of percent methane by volume in air to the Contracting Officer.

END OF SECTION

SECTION 02621 GEONET DRAINAGE LAYER

PART 1 GENERAL

1.1 SECTION INCLUDES

Specifications and guidelines for installing geonet consisting of GSE manufactured Hypernet or approved equivalent.

1.2 REFERENCES

ASTM D 1238-01	Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
ASTM D 1505-98	Standard Test Method for Density of Plastics by the Density-Gradient Technique
ASTM D 1603-94	Standard Test Method for Carbon Black in Olefin Plastics
ASTM D 4716-00	Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
ASTM D 5035-95	Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)
ASTM D 5199-99	Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes

1.3 SUBMITTALS

a. SD-03 Product Data

The Contractor shall submit the manufacturer's quality control manual for the geonet to be delivered to the site.

b. SD-07 Certificates

Prior to material delivery to project site, the Contractor shall provide the Contracting Officer with a written certification or manufacturers quality control data which displays that the geonet meets or exceeds minimum material properties specified herein.

1.4 MATERIAL LABELING, DELIVERY, STORAGE, AND HANDLING

a. Labeling: Each roll of geonet delivered to the site shall be labeled. The label will identify the manufacturer's name and product identification.

b. Delivery: Rolls of geonet will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.

c. Storage: The on-site storage location for the geonet, provided by the Contractor to protect the geonet from abrasions, excessive dirt, and moisture, shall have the following characteristics. The storage area shall be level (no wooden pallets), smooth, protected from theft and vandalism, and adjacent to the area being lined.

d. Handling

1. The Contractor shall handle all geonet in such a manner as to ensure it is not damaged in any way.

2. The Contractor shall take any necessary precautions to prevent damage to underlying layers during placement of the geonet.

PART 2 PRODUCTS

2.1 GEONET PROPERTIES

a. A geonet shall be manufactured by extruding two crossing strands to form a bi-planar drainage net structure.

b. The geonet specified shall have properties that meet or exceed the values listed in the following table:

Property	Test Method	Minimum Required Value
Transmissivity (gal/min/ft)	ASTM D 4716-00	9.66
Thickness (mil)	ASTM D 5199	200
Density (gm/cm^3)	ASTM D 1505	0.94
Tensile Strength (lbs/in)	ASTM D 5035	45
Carbon Black Content (%)	ASTM D 1603, modified	2.0

2.2 MANUFACTURING QUALITY CONTROL

a. The geonet shall be manufactured in accordance with the Manufacturer's QC Plan.

b. The Contractor shall deliver geonet shall comply with the minimum requirements listed in the preceding table.

PART 3 EXECUTION

3.1 FAMILIARIZATION

a. Inspection

1. Prior to implementing any of the work in the section to be lined, the Contractor shall carefully inspect the installed work of all other sections and verify that all work is complete to the point where the installation of the section may properly commence without adverse impact.

2. If the Contractor has any concerns regarding the installed work of other sections, he/she shall notify the Contracting Officer.

3.2 MATERIAL PLACEMENT

a. The geonet roll should be installed in the direction of the slope and in the intended direction of flow unless otherwise specified by the Contracting Officer.

b. In the presence of wind, all geonets shall be weighted down with sandbags or the equivalent. Such sandbags shall be used during placement and remain until replaced with cover material.

c. In applying fill material, no equipment can drive directly across the geonet. The specified fill material shall be placed and spread utilizing vehicles with a low ground pressure.

d. The cover soil shall be placed in the geonet in a manner that prevents damage to the geonet. Placement of the cover soil shall proceed immediately following the placement and inspection of the geonet.

3.3 SEAMS AND OVERLAPS

a. Each component of the geonet will be secured to the like component at overlaps.

b. Geonet Components

1. Adjacent edges of the geonet along the length of the geonet roll shall be placed with the edges of each geonet butted against each other.

2. The butted edges shall be joined by tying the geonet structure with cable ties. These ties shall be spaced every 5 feet along the roll length.

3. Adjoining net rolls (end to end) across the roll width should be shingled down in the direction of the slope and joined together with cable ties spaced every foot along the roll width.

4. Geonet should be tied every 6 inches in the anchor trench.

3.4 REPAIR

a. Prior to covering the deployed geonet, each roll shall be inspected for damage resulting from construction.

b. Any rips, tears, or damaged areas on the deployed geonet shall be removed and patched. The patch shall be secured to the original geonet by tying every 6 inches with the approved tying devices. If the area to be repaired is more than 50 percent of the width of the panel, the damaged area shall be cut out, the two portions of the geonet shall be cut out, and the two portions of the geonet shall be joined in accordance with Subsection 3.03.

END OF SECTION

SECTION 02630 CONSTRUCTION DRAINAGE AND EROSION CONTROLS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ASTM INTERNATIONAL

ASTM D 6461-99	Standard Specification for Silt Fence Materials
ASTM D 6462-99	Standard Practice for Silt Fence Installation

1.2 SUBMITTALS

Submit the following in accordance with Section 01330 Submittal Procedures.

1.2.1 SD-03, Product Data

a. Silt Fence Filter Fabric

b. Sediment Control Logs

c. Erosion Control Matting

1.2.2 SD-07, Certificates

a. Silt Fence

b. Sediment Control Logs

c. Erosion Control Matting

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery and Storage

Inspect materials delivered to site for damage; store with minimum of handling. Store erosion control matting under cover out of direct sunlight. Do not store materials directly on the ground.

1.3.2 Handling

Handle materials in a manner to ensure delivery to the point of installation in sound undamaged condition.

PART 2 PRODUCTS

2.1 SILT FENCE

The silt fence materials used during construction shall conform to ASTM D 6461-99.

2.2 SEDIMENT CONTROL LOGS

The sediment control logs used during construction are designed to filter overland runoff and capture sediment. Logs shall be manufactured from 100 percent organic fiber and shall be from 30 to 50 centimeters in diameter and about 3 meters in length.

2.3 EROSION CONTROL MATTING

Erosion control matting used during construction shall be constructed of organic materials, such as jute, wood, or coir (coconut husk). The erosion control matting shall be of a type that encourages, rather than inhibits, plant growth. The erosion control matting shall be left in place at the completion of construction to reduce soil erosion while vegetation becomes established. Erosion control matting on final slopes shall not be removed unless erosion repairs of the slope become necessary.

PART 3 EXECUTION

3.1 SEDIMENT CONTROL SYSTEM

All sediment control system components shall be placed in accordance with manufacturer's instructions and details on Drawings. Installation of the silt fence shall conform to ASTM D 6462-99.

END OF SECTION

SECTION 02700 POLYETHYLENE GEOMEMBRANE LINER

PART 1 GENERAL

1.1 REFERENCES

ASTM INTERNATIONAL

ASTM D 1004	Test Method for Initial Tear Resistance of Plastic Film and Sheeting
ASTM D 1238	Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
ASTM D 1505	Test Method for Density of Plastics by the Density-Gradient Technique
ASTM D 1603	Test Method for Carbon Black in Olefin Plastics
ASTM D 3895	Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
ASTM D 4833	Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 5199	Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
ASTM D 5397	Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
ASTM D 5596	Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
ASTM D 5994	Standard Test Method for Measuring Core Thickness of Textured Geomembranes
ASTM D 6392	Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
ASTM D 6693	Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

GEOSYNTHETIC RESEARCH INSTITUTE

GRI GM 17	Test Properties, Testing Frequency and Recommended Warranty for Linear Low Density Polyethylene (LLDPE) Smooth Geomembranes

1.2 DEFINITIONS

Lot	A quantity of resin (usually the capacity of one rail car) used in the manufacture of geomembranes. Finished roll will be identified by a roll number traceable to the resin lot used.
Manufacturer	The party responsible for manufacturing the geomembrane rolls.
Laboratory	Party, independent from the Contractor and Manufacturer, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing.
Panel	Unit area of a geomembrane that will be seamed in the field that is larger than 100 ft^2.
Patch	Unit area of a geomembrane that will be seamed in the field that is less than 100 ft^2.
Subgrade	Soil layer surface which immediately underlies the geosynthetic material(s).

1.3 SUBMITTALS

a. SD-02 Shop Drawings:

1. Installation layout drawings illustrating proposed panel layout, including field seams and details. Approved drawings will be for concept only and actual panel placement will be determined by site conditions.

b. SD-03 Product Data:

1. Material warranties.

2. Product data indicating that no recycled polymer and no more than 10 percent rework of the same type of material (recycled product run) is added to the resin.

3. Installer's Geosynthetic Field Installation QA Plan.

c. SD-07 Certificates:

1. Resin data shall include certification stating that the resin meets the specification requirements.

d. SD-11 Closeout submittals.

1. As-built drawings showing actual geomembrane placement and seams, including typical anchor trench detail.

2. Certificate stating the geomembrane has been installed in accordance with the Contract Documents

1.4 QUALITY ASSURANCE

a. The Contractor's QA Officer will assure compliance with the project specifications.

1.5 QUALIFICATIONS

a. MANUFACTURER

1. Geomembrane shall be consist of 40-mil LLDPE manufactured by GSE Lining Technology, Inc., or approved equal

b. INSTALLER

1. The Contractor's installation shall be performed by a specialty subcontractor experienced in the installation and seam welding of 40-mil LLDPE geomembranes. The subcontractor's installation experience shall be recent (within the last 2 years).

2. The subcontractor's supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in these Contract Documents.

3. The subcontractor shall provide a minimum of one Master Seamer for work on the project. The Master Seamer must have completed a minimum of 1,000,000 square feet of geomembrane seaming work using the type of seaming apparatus proposed for the use on this project.

4. Subcontractor qualifications shall be submitted to Contracting Officer for approval

1.6 MATERIAL LABELING, DELIVERY, STORAGE, AND HANDLING

a. Labeling: Each roll of geomembrane delivered to the site shall be labeled by the manufacturer. The label shall identify the manufacturer's name, product identification, and product thickness

b. Delivery: Rolls of liner will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.

c. Storage: The on-site storage location for geomembrane material, provided by the Contractor to protect the geomembrane from punctures, abrasions, and excessive dirt and moisture. The storage location shall be level (no wooden pallets), smooth, dry, protected from theft and vandalism, and be adjacent to the area being lined

d. Handling: Materials are to be handled so as to prevent damage.

1.7 GEOMEMBRANE

a. Material shall be smooth polyethylene geomembrane as shown on the drawings.

b. Resin shall be new, first quality, compounded and manufactured specifically for producing geomembrane. Natural resin (without carbon black) shall meet the following minimum requirements:

Property	Test Method	LLDPE
Density [g/cm^3]	ASTM D 1505	0.915
Melt Flow Index [g/10 min.]	ASTM D 1238 (190/2.16)	≤ 1.0
OIT [minutes]	ASTM D 3895 (1 atm/200°C)	100

c. Geomembrane Rolls

1. Do not exceed a combined maximum total of 1 percent by weight of additives other than carbon black.

2. Geomembrane shall be free of holes, pinholes as verified by online electrical detection, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

3 All liner sheets produced at the factory shall be inspected prior to shipment for compliance with the physical property requirements listed in Section 1.07 and be tested by an acceptable method of inspecting for pinholes. If pinholes are located, identified, and indicated during manufacturing, these pinholes may be corrected during installation.

4. Geomembrane shall meet the requirements shown in the Table 1.

TABLE 1
Minimum Values for Smooth Black-Surfaced LLDPE Geomembranes

Property	Test Method[1]	Minimum Value
Thickness, mil (mm) Minimum Average Lowest Individual Reading	ASTM D 5199	 40 (1.0) 36 (0.91)
Density, g/cm^3	ASTM D 1505	0.92
Carbon Black Content, %	ASTM D 1603, mod.	2.0
Carbon Black Dispersion	ASTM D 5596	*Note 2*
Tensile Properties: (each direction)	ASTM D 6693	
Strength at Break, lb/in (kN/m)		152 (27)
Elongation at Break, %	(2.0" gauge length)	850
Tear Resistance, lb (N)	ASTM D 1004	22 (100)
Puncture Resistance, lb (N)	ASTM D 4833	62 (276)
Oxidative Induction Time, min.	ASTM D 3895	100

Notes:

1 Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.

2 Only near spherical agglomerates are considered. 9 of 10 views shall be Category 1 or 2. No more than one view Category 3.

d. Extrudate Rod or Bead

1. Extrudate material shall be made from same type resin as the geomembrane.

2. Additives shall be thoroughly dispersed.

3. Materials shall be free of contamination by moisture or foreign matter.

1.8 EQUIPMENT

a. Welding equipment and accessories shall meet the following requirements:

1. Gauges showing temperatures in apparatus (extrusion welder) or wedge (wedge welder) shall be present.

2. An adequate number of welding apparati shall be available to avoid delaying work.

3. Power source must be capable of providing constant voltage under combined line load.

1.9 DEPLOYMENT

a. Assign each panel a simple and logical identifying code. The coding system shall be subject to approval and shall be determined at the job site.

b. Visually inspect the geomembrane during deployment for imperfections and mark faulty or suspect areas.

c. Deployment of geomembrane panels shall be performed in a manner that will comply with the following guidelines:

1. Unroll geomembrane using methods that will not damage geomembrane and will protect underlying surface from damage (spreader bar, protected equipment bucket).

2. Place ballast (commonly sandbags) on geomembrane that will not damage geomembrane to prevent wind uplift.

3. Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage it. Smoking will not be permitted on the geomembrane.

4. Do not allow heavy vehicular traffic directly on geomembrane. Rubber-tired ATV's and trucks are acceptable if wheel contact is less than 6 psi.

5. Protect geomembrane in areas of heavy traffic by placing protective cover over the geomembrane.

d. Sufficient material (slack) shall be provided to allow for thermal expansion and contraction of the material.

1.10 FIELD SEAMING

a. Seams shall meet the following requirements:

1. To the maximum extent possible, orient seams parallel to line of slope; for example, down and not across slope.

2. Minimize number of field seams in corners, odd-shaped geometric locations and outside corners.

3. Slope seams (panels) shall extend a minimum of 5 feet beyond the grade break into the flat area.

4. Use a sequential seam numbering system compatible with panel numbering system.

5. Align seam overlaps consistent with the requirements of the welding equipment being used. A 6-inch overlap is commonly suggested.

b. During Welding Operations

1. Provide at least one Master Seamer who shall provide direct supervision over other welders as necessary.

c. Extrusion Welding

1. Hot-air tack adjacent pieces together using procedures that do not damage the geomembrane.

2 Clean geomembrane surfaces by disc grinder or equivalent.

3 Purge welding apparatus of heat-degraded extrudate before welding.

d. Hot Wedge Welding

1. Welding apparatus shall be a self-propelled device equipped with an electronic controller which displays applicable temperatures.

2. Clean seam area of dust, mud, moisture, and debris immediately ahead of hot wedge welder.

3. Protect against moisture build-up between sheets.

e. Trial Welds

1. Perform trial welds on geomembrane samples to verify welding equipment is operating properly.

2. Make trial welds under the same surface and environmental conditions as the production welds; for example, in contact with subgrade and similar ambient temperature.

3. Minimum of two trial welds per day, per welding apparatus; one made prior to the start of work and one completed at mid shift.

4. Cut four, 1-inch-wide by 6-inch-long test strips from the trial weld.

5. Quantitatively test specimens for peel adhesion, and then for shear strength.

6. Trial weld specimens shall pass when the results shown in Table 2 are achieved in both peel and shear test.

   a. The break, when peel testing, occurs in the liner material itself, not through peel separation (FTB).

   b. The break is ductile.

7. Repeat the trial weld, in its entirety, when any of the trial weld samples fail in either peel or shear.

8. No welding equipment or welder shall be allowed to perform production welds until equipment and welders have successfully completed trial weld.

TABLE 2
Minimum Weld Values for LLDPE Geomembranes

Property	Test Method	Minimum Value
Peel Strength (extrusion), ppi (kN/m)	ASTM D 6392	48 (8.4)
Peel Strength (fusion), ppi (kN/m)	ASTM D 6392	50 (8.8)
Shear Strength (fusion & ext.), ppi (kN/m)	ASTM D 6392	60 (10.5)

f. Seaming shall not proceed when ambient air temperature or adverse weather conditions jeopardize the integrity of the liner installation. Contractor shall demonstrate that acceptable seaming can be performed by completing acceptable trial welds.

g. Defects and Repairs

   1. Examine all seams and non-seam areas of the geomembrane for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.

2. Repair and non-destructively test each suspect location in both seam and non-seam areas. Do not cover geomembrane at locations that have been repaired until test results with passing values are available.

1.11 FIELD QUALITY ASSURANCE

a. Field Testing

1. Non-destructive testing may be carried out as the seaming progresses or at completion of all field seaming.

   a. Vacuum Testing shall be performed in accordance with ASTM D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.

   b. Air Pressure Testing shall be performed in accordance with ASTM D 5820, Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes.

2. Destructive Testing

   a. Location and Frequency of Testing

      1. Collect destructive test samples at a frequency of one per every 1500 lineal feet of seam length.

      2. Test locations will be determined after seaming.

      3. Exercise Method of Attributes as described by GRI GM-14 (Geosynthetic Research Institute, http://www.geosynthetic-institute.org) to minimize test samples taken.

   b. Sampling Procedures are performed as follows:

      1. Contractor shall cut samples as the seaming progresses in order to obtain field laboratory test results before the geomembrane is covered.

      2. Contractor shall number each sample, and the location will be noted on the installation as-built.

      3. Samples shall be 12 inches wide by minimal length with the seam centered lengthwise.

4. Cut a 2-inch wide strip from each end of the sample for field testing.

5. Destructive testing shall be performed in accordance with ASTM D 6392, Standard Test Method for Determining the Integrity of Non-Reinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.

6. Contractor shall repair all holes in the geomembrane resulting from destructive sampling.

7. Repair and test the continuity of the repair in accordance with these Specifications.

3. Failed Seam Procedures

a. If the seam fails, Contractor shall follow one of two options:

1. Reconstruct the seam between any two passed test locations.

2. Trace the weld to intermediate location at least 10 feet minimum or where the seam ends in both directions from the location of the failed test.

b. The next seam welded using the same welding device is required to obtain an additional sample; for example, if one side of the seam is less than 10 feet long.

c. If sample passes, then the seam shall be reconstructed or capped between the test sample locations.

d. If any sample fails, the process shall be repeated to establish the zone in which the seam shall be reconstructed.

1.12 REPAIR PROCEDURES

a. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.

b. Repair any portion of unsatisfactory geomembrane or seam area failing a destructive or non-destructive test.

c. Contractor shall be responsible for repair of defective areas.

d. Agreement upon the appropriate repair method shall be decided between Contractor and Contracting Officer by using one of the following repair methods:

1. Patching: Used to repair large holes, tears, undispersed raw materials, and contamination by foreign matter.

2. Abrading and Rewelding: Used to repair short section of a seam.

3. Spot Welding: Used to repair pinholes or other minor, localized flaws, or where geomembrane thickness has been reduced.

4. Capping: Used to repair long lengths of failed seams.

5. Flap Welding: Used to extrusion weld the flap (excess outer portion) of a fusion weld in lieu of a full cap.

6. Remove the unacceptable seam and replace with new material.

e. The following procedures shall be observed when a repair method is used:

1. All geomembrane surfaces shall be clean and dry at the time of repair.

2. Surfaces of the polyethylene that are to be repaired by extrusion welds shall be lightly abraded to assure cleanliness.

3. Extend patches or caps at least 6 inches for extrusion welds and 4 inches for wedge welds beyond the edge of the defect, and around all corners of patch material.

F Repair Verification

1. Number and log each patch repair.

2. Non-destructively test each repair using methods specified in this Specification.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

AMERICAN NATIONAL STANDARD (ANS)

ANS 253.1	(1967) Fundamental Specification of Safety Colors

ASTM INTERNATIONAL

ASTM A 123	(2000) Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products
ASTM A 307	(2000) Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
ASTM A 449	(2000) Specification for Quenched and Tempered Steel Bolts and Studs
ASTM B 209	(2000) Specification for Aluminum and Aluminum-Alloy Sheet and Plate

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, Submittal Procedures.

1.2.1 SD-02, Drawings

a. Warning sign; G

One shop drawing of sign indicated on the Drawings.

PART 2 PRODUCTS

2.1 SIGNS

2.1.1 Substrate

Conform to ASTM B 209 for aluminum sheet plate requirements. Provide caution or warning signs from aluminum plate with the thickness of at least 1.3 mm. Appropriate sign mounting hardware shall be fastened to back of substrate by rivets or welding to allow mounting of sign on post.

2.1.2 Paint

Use the opaque glossy sample colors as specified in Table 1 of Fundamental Specification of Safety Colors for Commercial Item Description, Standard Source "C" ANS 253.1-1967. Unless directed by the Contracting Officer, standard color of the background shall be yellow with black letters.

2.1.3 Posts

Signposts shall be of the U-channel type, 3 lbs/ft nominal, fabricated of hot rolled carbon steel bars. Finish shall be galvanized according to ASTM A 123. Posts shall have a uniform hole pattern.

The post shall consist of two parts, a signpost and a base post. The base post shall be identical to the signpost except having a pointed and sharpened-edge end for post driving. Holes between the base post and signpost shall be of identical pattern.

2.1.4 Anchors

Metal fasteners shall conform to ASTM A 307. All other hardware shall be Society of Automotive Engineers (SAE) Grade 5 or ASTM Grade A 449 hardness minimum. Threaded components shall use either nylon inserts or a chemical thread lock compound to prevent self-loosening.

2.1.5 Signs

Signage will be required to meet the following requirements:

a. Signs shall be bilingual in Spanish and English

b. Lettering shall be legible from a distance of at least 25 feet

c. Signs shall contain contact information for Navy personnel responsible for long-term landfill oversight

d. Signs shall be visible from surrounding areas and at potential routes of entry

e. Signs shall be of a material able to withstand the elements

f. Language for the warning signs will be:

"DANGER
Former Navy Landfill
Digging is Prohibited.
Disturbance of Soil
May be a Hazard
Call (925) 246-4011 for more information"

PART 3 EXECUTION

3.1 SIGN INSTALLATION

Place signs at locations shown in the drawings. Embedded metals shall be given a primer coat of the required paint on all surfaces prior to installation. Install posts to dimensions as designated on the Drawings. Do not damage coating before or during installation.

END OF SECTION

SECTION 02922 LANDSCAPING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL

ASTM C 602 (1995) Specification for Agricultural Liming Materials

CALIFORNIA STATUTES FOOD AND AGRICULTURE CODE

Division 18, Chapter 2 California Seed Law

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A (1909) Fertilizer

U. S. CODE OF FEDERAL REGULATIONS (CFR)

7 CFR 201.12a Labeling Agricultural Seeds - Lawn and Turf Seed Mixtures

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01330, Submittal Procedures.

1.2.1 SD-01, Preconstruction Submittal

a. Vegetation Establishment Plan

Written calendar period for the vegetation establishment period. When there is more than one vegetation establishment period, describe the boundaries of the vegetated area covered for each period.

1.2.2 SD-07, Certificates

Prior to the delivery of materials, certificates of compliance certifying that materials meet the requirements specified. Certified copies of the reports for the following materials shall be included.

a. Seed; G

b. Wetland area plants; G

Mixture, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, date tested, and state certification.

c. Mulch

Composition

d. Binder

U.S. Department of Agriculture (USDA) auxiliary soil chemical

e. Fertilizer

Chemical analysis, composition percent if used.

f. Lime

Calcium carbonate equivalent and sieve analysis if used.

1.3 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.3.1 Delivery of Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

1.3.2 Inspection

Inspect all materials upon arrival at the job site for conformity to specifications.

1.3.3 Storage

Materials shall be stored as follows. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment materials shall not be stored with other landscape materials.

1.3.4 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Seed Classification

State-approved seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with 7 CFR 201.12a, USDA Agricultural Marketing Service, and applicable state seed laws.

2.1.2 Seed Mixtures

a. All seed shall be furnished in bags or containers clearly labeled to show the name and address of the supplier, the seed name, the lot number, net weight, the percent of weed seed content and the guaranteed percentage of purity and germination. All brands furnished shall be free from all noxious seeds such as Russian or Canadian Thistle, European Bindweed, Johnson Grass, Leafy Spurge, and Arabian Thistle. The Contractor shall furnish to the Contracting Officer a signed statement certifying that the seed furnished is from a lot that has been tested by a recognized laboratory for seed testing within twelve (12) months prior to the date of delivery. Seed that has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.

b. Seed shall comply with the California Seed Law. Seed and seed labels shall conform to all applicable state regulations and will be subject to the testing provisions of the Association of Official Seed Analysis.

c. Seed shall not exceed 0.5 percent weed content by weight. If seed available on the market does not meet the minimum purity and germination percentages specified, the Contractor must compensate for a lesser percentage of purity or germination by furnishing sufficient additional seed to equal the specified product. Product comparison shall be made on the basis of pure live seed in pounds. The formula used for determining the quantity of pure live seed shall be: Pounds of seed x (Purity x Germination) = pounds of Pure Live Seed. Samples may be drawn by the Engineer for testing.

d. Final cover seed mixture shall be as follows:

% by Weight	Species	Application Rate (Pounds/Acre)
46%	Native red fescue *(Festuca rubra)*	40
25%	Blue wild rye *(Elymus glaucus)*	22
23%	California brome *(Bromus carinutus)*	20
6%	California poppy *(Eschscholzia californica)*	5

2.2 WETLAND PLANTS

Salt grass shall be planted or seeded throughout the area of wetland soils between elevation 1.0 and elevation 4.5. In addition alkali-bulrush shall be planted from elevation 1.0 to elevation 2.3. Pickleweed shall be planted or seeded from elevation 2.3 to elevation 4.5. Contractor shall submit intended supplier and plant species and mix as a part of the planting plan to be approved by the Navy.

2.3 MULCH

Mulch shall be fibrous, cellulose mulch, containing no growth or germination inhibiting substances and shall be manufactured in such a manner that, when thoroughly mixed with seed, fertilizer, organic stabilizer, and water, it will form a homogeneous slurry that is capable of being sprayed to form a porous mat. If possible, the mulch shall be green in color to allow metering during application. Biosolids may be used as part of the mulch material. Mulch shall be applied at a rate of 2,000 lbs/acre.

2.4 BINDER

Binder shall be of organic origin and registered with the USDA as an auxiliary soil chemical. Binder shall not be asphalt based. Binder shall be nontoxic to plant or animal life. Binder shall be applied at a rate of 120 lbs/acre.

2.5 PREMIXED MULCH/BINDER COMBINATIONS

Where premixed combinations meet or exceed other requirements of this Specification, they may be used.

2.6 WATER

Shall not contain a total dissolved solids level of greater than that in base potable supply or exceed the salt tolerance of the plant species for any growth regime, irrigation practice used, and local climate. Water shall be applied at rate such that hydroseeding machinery operates smoothly, but that minimizes surface runoff and leaching once applied.

2.7 HYDRAULIC EQUIPMENT

Contractor shall use a commercial type mulcher for the application of slurry. Equipment shall have a built-in agitation system with an operation capacity sufficient to agitate, suspend and homogeneously mix slurry. Distribution lines shall be large enough to prevent stoppage and to provide even distribution of the slurry over the ground. The pump must be capable of exerting up to 150 psi at the nozzle. The slurry tank shall have a minimum capacity of 1,000 gallons and shall be mounted on a traveling unit that will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded so as to provide uniform distribution without waste.

2.8 SOIL AMENDMENTS

Soil amendments shall consist of lime, fertilizer, organic soil amendments, and soil conditioners meeting the following requirements. Soils used as topsoil or wetland compatible soil shall be amended as recommended by soil test in Section 02300, Earthwork.

2.8.1 Lime

Lime shall be agricultural limestone in accordance with ASTM C 602. Lime shall be applied at a rate of 7,750 pounds per acre.

2.8.2 Fertilizer

Fertilizer shall be commercial grade, free flowing, uniform in composition, conforming to CID A-A-1909, and meet requirements as recommended from the results of the soil test. Application rate shall be determined from the soil test.

PART 3 EXECUTION

3.1 SEEDING, TIMES, AND CONDITIONS

3.1.1 Seeding Time

Seed shall be sown according to supplier instructions. If feasible, seeding shall take place as soon as final grade has been achieved and heavy equipment has been retired from the project, but shall be confined to the months of October, November, February, March, or April.

3.1.2 Planting Conditions

Planting operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work

shall be stopped. When special conditions warrant a variance to the planting operations, proposed times shall be submitted to and approved by the Contracting Officer.

3.2 SITE PREPARATION

3.2.1 Finish Grading

3.2.1.1 Preparation

Drainage patterns shall be maintained as indicated on Drawings. Areas designated for hydroseed that have been compacted by construction operations shall be scarified to a depth of 1 to 2 inches. Soil used for repair of erosion or grade deficiencies shall conform to topsoil requirements specified in Section 02300, Earthwork.

3.2.1.2 Protection

Finished graded areas shall be protected from damage by vehicular or pedestrian traffic and erosion.

3.3 HYDROSEEDING

3.3.1 General

Seeding shall be in all areas disturbed. Seeding should be applied to within 1 foot of roadbeds, other impervious surfaces, or undisturbed surroundings. Previously prepared seedbed areas compacted or damaged by interim rain, traffic or other cause, shall be reworked to restore the ground condition previously specified. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution.

All slurry preparation shall take place on the job site. Operators of hydroseeding equipment shall be thoroughly experienced in this type of application. Obtain approval of hydroseed area preparation from the Contracting Officer prior to application.

3.3.2 Mixing

Water, mulch, and binder shall be added to the mixing tank first. Fertilizer and seed shall be added at the last practical moment. The slurry must be completely homogeneous before application.

3.3.3 Application

Apply specified slurry mix in a sweeping motion to form a uniform mat at the specified rate. Limit hydroseeding to designated areas and prevent contact with other items. Slurry mixture that has not been applied within 2 hours of mixing shall be removed from the site. Total time from the addition of seed to seed discharge shall be less than 1 hour, if more than 1 hour, the remainder of the load shall be recharged with seed.

3.4 RESTORATION AND CLEANUP

3.4.1 Restoration

Existing vegetated areas, pavements, and facilities that have been damaged from the hydroseeding operation shall be restored to their original condition.

3.4.2 Cleanup

Excess and waste material shall be removed from the planting operation and shall be disposed of off the site. Adjacent paved areas shall be cleaned. Immediately after application, thoroughly wash and clean all paved areas, and structures that are not intended to receive slurry mix.

3.5 PROTECTION OF SEEDED AREAS

Once hydroseeding has taken place, care shall be taken to avoid damage to the surface until soil is firm and more than 80 percent of plants have germinated. Avoid vehicular traffic, especially that which creates depressions or ruts. Keep foot traffic to a minimum and, in all cases, avoid repeat traffic over the same area.

3.6 VEGETATION ESTABLISHMENT PERIOD

3.6.1 Commencement

The Vegetation Establishment Period for establishing healthy vegetation shall begin on the first day of seeding operation or planting under this contract and shall end 6 months after the last day of seeding or planting operations required by this contract. Written calendar time shall be furnished to the Contracting Officer for the Vegetation Establishment Period.

3.6.2 Satisfactory Stand of Vegetation

A satisfactory stand of vegetation from the seeding or planting operation is defined as a minimum of 10 plants per square foot. Cover at the end of the Establishment Period shall be 35 percent.

3.6.3 Maintenance During Establishment Period

3.6.3.1 General

Maintenance of the seeded areas shall include controlling insects, weeds, and diseases below levels that are detrimental to plant health. In addition, the Contractor shall protect embankments and ditches from erosion, maintain erosion control materials and mulch, protect vegetated areas from traffic, and water and fertilize as needed.

3.6.3.2 Watering

Watering shall be at intervals to obtain a moist soil condition to a minimum depth of 1 inch for hydroseeded areas or groundcover. Frequency of watering and quantity of water shall be adjusted in accordance with the growth of the vegetation. Run-off, run-on, puddling, and wilting shall be prevented.

3.6.3.3 Post-Fertilization

Nitrogen carrier fertilizer shall be applied at the rate of no more than 0.5 pounds per 1,000 square feet for hydroseeded areas or groundcover after the first month and again prior to the final acceptance. The application shall be timed prior to the advent of winter dormancy and shall avoid excessively high nitrogen levels.

3.6.3.4 Repair

The Contractor shall re-establish, as specified herein, eroded, damaged, or barren areas or plants, including seed and topsoil.

3.6.3.5 Maintenance Report

A written record shall be furnished to the Contracting Officer of the maintenance work performed.

3.7 FINAL ACCEPTANCE OF VEGETATION

3.7.1 Preliminary Inspection

Not less than 21 days prior to the completion of the Vegetation Establishment Period, a preliminary inspection will be held by the Contracting Officer. Date and time for the inspection will be established in writing and will be communicated to the Contractor 14 days prior to the inspection date. The acceptability of the vegetation in accordance with the Vegetation Establishment Period shall be determined. An unacceptable stand of vegetation shall be repaired as soon as conditions permit.

3.7.2 Final Inspection

Within 7 days of the end of the Vegetation Establishment Period, a final inspection will be held by the Contracting Officer to determine that deficiencies noted in the preliminary inspection have been corrected. Date and time for the inspection will be established in writing and communicated to the Contractor 14 days prior to the inspection date.

END OF SECTION

APPENDIX D
SETTLEMENT EVALUATION

TIDAL AREA LANDFILL SETTLEMENT CALCULATIONS

The thickness of Bay Mud varies across Installation Restoration (IR) Site 1, Tidal Area Landfill, at the Naval Weapons Station Seal Beach Detachment Concord. The thickness and type of Bay Mud at each of the probed cone penetrometer test (CPT) holes is presented below.

CPT Hole	Description
CPT-01	Fill – 0 to 7 feet Soft Bay Mud 7 to 59 feet (Soft Bay Mud Thickness = 52 feet)
CPT-02	Fill – 0 to 9 feet Soft Bay Mud 9 to 43 feet (Soft Bay Mud Thickness = 34 feet)
CPT-03	Fill – 0 to 5 feet Soft Bay Mud 5 to 10 feet (Soft Bay Mud Thickness = 5 feet)
CPT-04	Fill – 0 to 5 feet Soft Bay Mud is absent Medium Stiff Bay Mud 5 to 52 feet (Medium Stiff Bay Mud Thickness = 47 feet)
CPT-05	Fill – 0 to 5 feet Soft Bay Mud 5 to 21 feet (Soft Bay Mud Thickness = 16 feet)

Settlement of medium stiff Bay Bud will be comparatively small and is not included in the following calculations. Maximum loading caused by new grading will occur at the top of the landfill where the proposed grade will be 19 feet. Although the existing grade varies near the crest of the new fill, minimum elevations of about 8 feet are located in that area. The proposed fill in that area will be composed of 1.5 feet of vegetative cover, which consists of 6 inches of topsoil (estimated unit weight = 120 pounds per cubic foot [pcf]) plus 12 inches of general fill (125 pcf), 2 feet of compacted foundation soils (125 pcf), and 7.5 feet of compacted imported fill (125 pcf).

CPT-01 is located southwest of the landfill, where the soft Bay Mud is 52 feet thick. CPT-05 is located northwest of the landfill, where the Bay Mud is 16 feet thick. The western boundary of the landfill is located east of a line extending between CPT-01 and CPT-05. The interpolated mud thickness at the midpoint between CPT-01 and CPT-05 is the average of 52 and 16 (34 feet). CPT-03, with 5 feet of soft Bay Mud, is located east of the landfill. Interpolation between the estimated 34 feet of soft mud west of the landfill and the 5 feet of soft mud to the east suggests that about 15 feet of soft mud is present near the proposed crest of the landfill. (The future crest of the landfill will be located approximately two-thirds the distance east of the interpolated 34-foot-thick mud and the 5-foot thick mud at CPT-03.)

The compressibility of soft Bay Mud varies according to water content and other material characteristics. The compressibility is quantified by the compression ratio as described in Lambe and Whitman (1969)[1] and cited in a study of Bay Mud at Hamilton Air Force Base (AFB) (Bonaparte and Mitchell 1979)[2].

$$Compression\ Ratio = \frac{Cc}{1+e_o}\ (unitless) \qquad \text{(B-1)}$$

The compression ratio upper limit for highly compressible Bay Mud equals 0.4 from the study of Hamilton AFB Bay Mud (Bonaparte and Mitchell 1979), although unconsolidated Bay Mud has been known to exceed that number. However, the existing mud under the IR Site 1 landfill is partially consolidated by the weight of the existing landfill debris, so the following calculation will use 0.35 as a conservative estimate of the compression ratio.

$$Settlement = (T)(C)\log(\frac{P_f}{P_o}) \qquad \text{(B-2)}$$

where:

T = the thickness of the bay mud (in inches)

C = the compression ratio (unitless)

P_f = the final overburden pressure after placement of fill (in pounds per square foot [psf])

P_f = $P_o + P_N$

P_o = the original overburden pressure before placement of fill (in psf)

P_o = weight of existing fill plus buoyant weight of mud at center of compressible layer.

P_o = 4.5 feet of waste fill (105 pcf) plus 2.5 feet of inundated fill plus 7.5 feet of inundated Bay Mud

P_o = $(105\,pcf)(4.5\,ft) + (105\,pcf - 62\,pcf)(2.5\,ft) + (98\,pcf - 62\,pcf)(7.5\,ft) = 850\,psf$

P_N = Weight of new fill

P_N = 0.5 foot topsoil + 1 foot of general fill + 9.5 feet general fill below cap

P_N = $(120psf)(0.5ft)+(125psf)(1ft)+(125psf)(9.5ft)$

P_f = 850 + 1370 = 2220 psf

[1] Lambe, T.W., and R.V. Whitman. 1969. *Soil Mechanics.* Massachusetts Institute of Technology. John Wiley & Sons, Inc.
[2] Bonaparte R., and J.K. Mitchell. 1979. "The Properties of the San Francisco Bay Mud at Hamilton Air Force Base, California." Department of Civil Engineering, University of California, Berkeley. April.

The distance from the crest of the landfill to the edge of the landfill is approximately 400 feet. The predicted settlement is 26 inches. Significant fill will not be placed at the landfill edge, so significant settlement is not expected at that location. The predicted settlement of 26 inches over a distance of 360 feet would result in a 0.6 percent reduction of the overall slope of the landfill. The design slope of 3 percent would therefore flatten to 2.4 percent as the highest point of the landfill settles.

The foregoing assumes uniform conditions in terms of the subsurface materials (thicknesses and material properties) and in terms of the thickness of fills to be placed. A uniform fill causes more settlement than a fill with varying (diminishing) proportions. The thickness of new fill varies over the site, and the above analysis was conducted assuming the maximum fill was placed uniformly over the site. This assumption will tend to overestimate the amount of total settlement. Since the total settlement computed is likely to be overestimated, the differential settlement would likewise be overestimated.

APPENDIX E
SLOPE STABILITY EVALUATION

RESULTS OF THE STATIC AND DYNAMIC STABILITY EVALUATIONS AT THE TIDAL AREA LANDFILL

Slope Location	Static Slope Stability Evaluation Results
North Facing Slope (10 percent grade at perimeter)	Factor of Safety = 2.4

Because of the relatively flat slopes and low overall height of the Tidal Area Landfill at Naval Weapons Station Seal Beach Detachment Concord, the static slope stability factor of safety of the highest and steepest slope, located on the north side of the landfill, illustrates the overall static stability of the landfill under the proposed design slopes.

A pseudostatic seismic analysis was calculated for evaluation of dynamic stability to determine the acceleration required to cause a factor of safety equal to 1.0. The resultant acceleration, known as the yield acceleration, is the sustained lateral acceleration in one direction required to cause the design slope to yield. The approximate yield acceleration determined for the slope is 0.28 times the acceleration from gravity (g). Actual earthquake shaking does not result in sustained and constant accelerations in one direction, so additional steps in the evaluation are necessary. The distance to the earthquake fault and the earthquake magnitude are also used to evaluate seismic stability of slopes. The approximate bedrock acceleration at the site was evaluated based on earthquake magnitude and proximity of the site to the fault in question. The next step included the use of charts to estimate permanent displacement of the landfill surface in the event of earthquake shaking on the Hayward fault (evaluated maximum probable earthquake magnitude = 7.5) and the closer Concord fault (evaluated maximum probable earthquake magnitude 6.8).

The evaluation suggests that permanent displacement of the slope could be on the order of 8 inches or less as a result of a severe event on the Concord fault (magnitude 6.8). This evaluation methodology should be considered approximate at best because of a number of factors. For example, strength parameters were not calculated for the underlying geologic materials, and the lithology deep below the landfill is unknown. However, the landfill slopes are gentle (10 percent maximum) and the profile of the landfill is low (19 feet maximum). Refinements of the static and dynamic stability evaluations are not warranted because of the relatively conservative approximations involved in the static and seismic evaluations and the calculated factor of safety.

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
40 CFR Part 230—EPA's Section 404(B)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (continued)					
Wetland	Subpart E—Potential Impacts on Special Aquatic Sites 40 CFR § 230.41 (a)(1) Wetlands consist of areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.	Discharge of dredged material to waters of the United States including adjacent wetlands.	40 CFR § 230.41	Applicable	Substantive provisions of 230.41 are ARARs. The Navy will evaluate the effects of any discharge of fill material in accordance with these sections.

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
40 CFR Part 230—EPA's Section 404(B)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (continued)					
Wetland	Subpart H—Actions To Minimize Adverse Effects This subpart contains examples of actions that can be undertaken to minimize the adverse effects of discharges of dredged or fill material.	Discharge of dredged material to waters of the United States including adjacent wetlands.	230.70 Actions concerning the location of the discharge. 230.71 Actions concerning the material to be discharged. 230.72 Actions controlling the material after discharge. 230.73 Actions affecting the method of dispersion. 230.74 Actions related to technology. 230.75 Actions affecting plant and animal populations. 230.76 Actions affecting human use. 230.77 Other actions.	Applicable	These sections do not impose substantive requirements. They are recommendations and guidelines that will be considered by the Navy during implementation of the remedy.

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Clean Water Act 1988 as Amended, § 404 (33 U.S.C., ch. 26, §§ 1251–1387)					
Wetland	Action to prohibit discharge of dredged or fill material into wetland without permit.	Wetland as defined by Exec. Order No. 11990 Section 7.	33 U.S.C. § 1344	Applicable	Section 404 is an ARAR for filling activities.
Discharge of Dredged or fill material	Applicants for Section 404 permits must obtain Section 401 certification that the proposed activity will comply with water quality standards	Section 404 activity.	33 U.S.C. § 1341(a)	Relevant and Appropriate	The Navy will comply with the substantive provisions of Section 1341(a) The Navy does not expect filling activities to result in a violation of any state water quality standard. The Navy will work with the Water Board to ensure that that filling activities comply with state water quality standards.
Rivers and Harbors Act of 1899 (33 U.S.C. §§ 401–413)					
Navigable waters	Permits required for structures or work in or affecting navigable waters.	Activities affecting navigable waters.	33 U.S.C. § 403 33 C.F.R. § 322	Applicable	This section is an ARAR for filling of the pond. The Navy will comply with the substantive provisions of these sections.

Notes:

§ Section
ARAR Applicable or relevant and appropriate requirement

APPENDIX F
SUPPLEMENTAL ARARs EVALUATION

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
33 CFR Part 320-330 U.S. Army Corps of Engineer's Guidelines					
Wetland	Requirements for discharges of dredged material to waters of the United States. 320.1 (b) *Types of activities regulated.* This part and the parts that follow (33 CFR parts 321 through 330) prescribe the statutory authorities, and general and special policies and procedures applicable to the review of applications for Department of the Army permits for controlling certain activities in waters of the United States or the oceans. This part identifies the various federal statutes which require that Army permits be issued before these activities can be lawfully undertaken; and related Federal laws and the general policies applicable to the review of those activities	Discharge of dredged material to waters of the United States including adjacent wetlands.	33 CFR § 320.1(b) Purpose and scope.	Applicable	The substantive provisions of Section 320.1(b) are ARARs. Although the Navy does not need to obtain a permit under CERCLA Section 121(e), the Navy does comply with the substantive provisions of permit requirements when they are applicable or relevant and appropriate.

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
33 CFR Part 320-330 U.S. Army Corps of Engineer's Guidelines (continued)					
Wetland	Activities of Federal agencies. Discharges of dredged or fill material into waters of the United States done by or on behalf of any Federal agency, other than the Corps of Engineers (see 33 CFR 209.145), are subject to the authorization procedures of these regulations. Agreement for construction or engineering services performed for other agencies by the Corps of Engineers does not constitute authorization under the regulations. Division and district engineers will therefore advise Federal agencies and instrumentalities accordingly and cooperate to the fullest extent in expediting the processing of their applications	Discharge of dredged material to waters of the United States including adjacent wetlands.	33 CFR § 323.3(b) Purpose and scope.	Applicable	The substantive provisions of Section 323.3(b) are ARARs. This subsection describes the activities of federal agencies for discharges requiring permits. Again, although the Navy does not need a permit, the Navy will communicate with the Army Corps of Engineers regarding the filling of any wetlands and waters.

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
33 CFR Part 320-330 U.S. Army Corps of Engineer's Guidelines (continued)					
Wetland	(a) Nationwide permit verification. Nationwide permitees may, and in some cases must, request from a district engineer confirmation that an activity complies with the terms and conditions of a nationwide permit. (b) Expiration of nationwide permits. The Chief of Engineers will periodically review nationwide permits and will decide to modify, reissue, or revoke the permits. (c) Multiple use of nationwide permits. Two or more nationwide permits may be combined. Combining nationwide permits with individual permits. Portions of a larger project may proceed under the authority of the nationwide permits while an individual permit is evaluated for other portions.	Discharge of dredged material to waters of the United States including adjacent wetlands.	33 CFR § 330.6 (Nationwide Permit program.)	Applicable	The substantive provisions of Section 330.6 are ARARs. Again, although the Navy does not have to apply for a nationwide permit, the Navy will comply with the substantive provisions of the nationwide permit program including but not limited to Nationwide Permit 38.

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
40 CFR Part 230—EPA's Section 404(B)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material					
Wetland	Subpart B- Compliance with the Guidelines. 40 CFR § 230.10 Restrictions on discharge. This section sets forth requirements for discharge of dredge or fill material. 40 CFR § 230.11 Factual determinations. This section sets for the determinations of effects which must be considered for (a) physical substrate; (b) water circulation, fluctuation, and salinity; suspended particulate/turbidity; (d) contaminant; (e) aquatic ecosystem and organisms; (f) proposed disposal; (g) cumulative effects on the aquatic ecosystem; and (h) secondary effects on the aquatic ecosystem.	Discharge of dredged material to waters of the United States including adjacent wetlands.	40 CFR §230.10 (Restrictions on discharge.) and §230.11 (Factual determinations)	Applicable	The substantive provisions of 230.10 and 230.11 are ARARs. In accordance with these sections, the Navy will evaluate the effects of any discharge of fill material and refrain from any discharge that violates the restrictions.

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
40 CFR Part 230—EPA's Section 404(B)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (continued)					
Wetland	Subpart C -Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem. The effects described in this subpart should be considered in making the factual determinations and the findings of compliance or non-compliance in subpart B.	Discharge of dredged material to waters of the United States including adjacent wetlands.	40 CFR § 230.20 (Substrate); 230.21 (Suspended particulates/turbidity); 230.22 (Water); 230.23 (Current patterns and water circulation); 230.24 (Normal water fluctuations); 230.25 (Salinity gradients)	Applicable	The substantive provisions are ARARs. The Navy will evaluate the effects of any discharge of fill material in accordance with these sections

TABLE F-1: SUPPLEMENTAL ARARS EVALUATION FOR IR SITE 1, TIDAL AREA LANDFILL (CONTINUED)
Explanation of Significant Differences, Landfill Cap Redesign, IR Site 1, Tidal Area Landfill, NAVWPNSTA Seal Beach Det Concord, California

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
40 CFR Part 230—EPA's Section 404(B)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (continued)					
Wetland	Subpart D- Potential Impacts on Biological Characteristics of the Aquatic Ecosystem. 40 CFR § 230.30 Threatened and endangered species 40 CFR § 230.31 Fish, crustaceans, mollusks, and other aquatic organisms 40 CFR § 230.32 Other wildlife The impacts described in these sections should be considered when making the factual determinations and findings of compliance or non-compliance. These sections describe threatened and endangered species, fish, crustaceans, mollusks, other aquatic organisms in the food web and other wildlife and the possible loss of values.	Discharge of dredged material to waters of the United States including adjacent wetlands.	40 CFR § 230.30 (Threatened and endangered species) 40 CFR § 230.31 (Fish, crustaceans, mollusks, and other aquatic organisms) 40 CFR § 230.32 (Other wildlife)	Applicable	The substantive provisions are ARARs. The Navy will evaluate the effects of any discharge of fill material in accordance with these sections